**Third Generation Partnership Project (3GPP™)**

**DRAFT Meeting Report  
for  
TSG RAN WG4  
meeting: 97-e**

**Electronic Meeting, Online, 02/11/2020 to 13/11/2020**

Report generated on Monday, 2020-11-23 13:05 UTC

Contents:

1 Opening of the E-meeting 13

2 Approval of the agenda 13

3 Letters / reports from other groups / meetings 14

4 Rel-15 New radio access technology 16

4.1 System Parameters Maintenance [NR\_newRAT-Core] 16

4.2 UE RF requirements maintenance [NR\_newRAT] 19

4.2.1 [FR1] Maintenance for 38.101-1 [NR\_newRAT-Core] 19

4.2.1.1 Maintenance for Transmitter characteristics [NR\_newRAT-Core] 20

4.2.1.2 Maintenance for Receiver characteristics [NR\_newRAT-Core] 29

4.2.2 [FR2] Maintenance for 38.101-2 [NR\_newRAT-Core] 31

4.2.2.1 Regulatory Tx/Rx spurious emission limits handling [NR\_newRAT-Core] 32

4.2.2.2 Maintenance for Transmitter characteristics [NR\_newRAT-Core] 37

4.2.2.3 Maintenance for Receiver characteristics [NR\_newRAT-Core] 43

4.2.3 Maintenance for 38.101-3 [NR\_newRAT-Core] 45

4.2.3.1 [FR1] Maintenance for Transmitter characteristics within FR1 [NR\_newRAT-Core] 46

4.2.3.2 [FR1+FR2] Maintenance for Transmitter characteristics involving both FR1 and FR2 [NR\_newRAT-Core] 55

4.2.3.3 [FR1] Maintenance for Receiver characteristics within FR1 [NR\_newRAT-Core] 56

4.2.3.4 [FR1+FR2] Maintenance for Receiver characteristics involving both FR1 and FR2 [NR\_newRAT-Core] 59

4.3 UE EMC [NR\_newRAT-Core] 59

4.3.1 General [NR\_newRAT-Core] 59

4.3.2 Emission requirements [NR\_newRAT-Core] 59

4.3.3 Immunity requirements [NR\_newRAT-Core] 59

4.4 BS RF [NR\_newRAT-Core] 59

4.4.1 General [NR\_newRAT-Core] 59

4.4.2 Transmitter characteristics maintenance [NR\_newRAT-Core] 60

4.4.3 Receiver characteristics maintenance [NR\_newRAT-Core] 62

4.5 BS conformance testing [NR\_newRAT-Perf] 62

4.5.1 General [NR\_newRAT-Perf] 62

4.5.2 BS specifications clean-ups (including conformance testing and core) [NR\_newRAT-Perf/Core] 63

4.5.2.1 eAAS specifications [NR\_newRAT-Perf/Core] 63

4.5.2.2 MSR specifications [NR\_newRAT-Perf/Core] 72

4.5.2.3 NR conformance testing specifications [NR\_newRAT-Perf] 79

4.5.3 Conducted conformance testing (38.141-1) [NR\_newRAT-Perf] 83

4.5.4 Radiated conformance testing (38.141-2) [NR\_newRAT-Perf] 83

4.6 BS EMC [NR\_newRAT-Core] 86

4.6.1 Core requirements [NR\_newRAT-Core] 87

4.6.1.1 Emission requirements [NR\_newRAT-Core] 87

4.6.1.2 Immunity requirements [NR\_newRAT-Core] 87

4.6.2 Performance requirements [NR\_newRAT-Perf] 88

4.7 RRM core requirements maintenance (38.133/36.133) [NR\_newRAT-Core] 91

4.8 RRM perf. requirements maintenance (38.133/36.133) [NR\_newRAT-Perf] 117

4.9 Demodulation and CSI requirements maintenance (38.101-4/38.104) [NR\_newRAT-Perf] 150

4.9.1 UE demodulation requirements [NR\_newRAT-Perf] 150

4.9.2 CSI requirements [NR\_newRAT-Perf] 153

4.9.3 BS demodulation requirements [NR\_newRAT-Perf] 154

4.10 Positioning specs maintenance (36.171, 37.171 and 38.171) [NR\_newRAT-Perf or TEI] 156

4.11 Testability Maintenance (38.810) [FS\_NR\_test\_methods] 156

5 LTE maintenance (up to Rel15) [WI code or TEI] 156

5.1 BS RF requirements [WI code or TEI] 156

5.2 UE RF requirements [WI code or TEI] 159

5.3 RRM requirements [WI code or TEI] 162

5.4 Demodulation and CSI requirements [WI code or TEI] 167

5.4.1 UE demodulation and CSI requirements [WI code or TEI] 167

5.4.2 BS demodulation requirements [WI code or TEI] 171

6 Rel-16 Work Items for LTE 172

6.1 Additional MTC enhancements for LTE [LTE\_eMTC5] 172

6.1.1 RF core requirements maintenance [LTE\_eMTC5-Core] 172

6.1.2 RRM core requirements maintenance [LTE\_eMTC5-Core] 172

6.1.3 RRM perf. requirements [LTE\_eMTC5-Perf] 176

6.1.3.1 General [LTE\_eMTC5-Perf] 176

6.1.3.2 Test cases [LTE\_eMTC5-Perf] 176

6.1.4 Demodulation and CSI requirements maintenance (36.101) [LTE\_eMTC5-Perf] 178

6.1.4.1 UE demodulation requirements [LTE\_eMTC5-Perf] 178

6.1.4.2 CSI requirements [LTE\_eMTC5-Perf] 178

6.2 Additional enhancements for NB-IoT [NB\_IOTenh3] 179

6.2.1 RF core requirements maintenance [NB\_IOTenh3-Core] 179

6.2.2 RRM core requirements maintenance [NB\_IOTenh3-Core] 179

6.2.3 RRM perf. requirements [NB\_IOTenh3-Perf] 181

6.2.3.1 General [NB\_IOTenh3-Perf] 181

6.2.3.2 Test cases [NB\_IOTenh3-Perf] 181

6.2.4 Demodulation and CSI requirements maintenance (36.101/36.104) [NB\_IOTenh3-Perf] 183

6.2.4.1 UE demodulation requirements [NB\_IOTenh3-Perf] 183

6.2.4.2 BS demodulation requirements [NB\_IOTenh3-Perf] 183

6.3 Even further Mobility enhancement in E-UTRAN [LTE\_feMob] 184

6.3.1 RRM core requirements maintenance [LTE\_feMob-Core] 184

6.3.2 RRM perf. requirements [LTE\_feMob-Perf] 185

6.3.2.1 General [LTE\_feMob-Perf] 186

6.3.2.2 Test cases [LTE\_feMob-Perf] 186

6.4 R16 LTE maintenance [WI code] 187

6.4.1 BS RF requirements [WI code] 187

6.4.2 UE RF requirements [WI code] 187

6.4.3 RRM requirements [WI code] 192

6.4.4 Demodulation and CSI requirements [WI code] 192

6.4.4.1 UE demodulation and CSI requirements [WI code] 192

6.4.4.2 BS demodulation requirements [WI code] 193

7 Rel-16 non-spectrum related work items for NR 193

7.1 NR-based access to unlicensed spectrum [NR\_unlic] 193

7.1.1 System Parameters [NR\_unlic-Core] 193

7.1.1.1 60kHz SCS [NR\_unlic-Core] 194

7.1.1.2 Wideband operation related [NR\_unlic-Core] 194

7.1.1.3 Others [NR\_unlic-Core] 197

7.1.2 UE RF requirements [NR\_unlic-Core] 198

7.1.2.1 Transmitter characteristics [NR\_unlic-Core] 200

7.1.2.2 Receiver characteristics [NR\_unlic-Core] 201

7.1.3 Band combination related (Analysis, TPs, etc.) [NR\_unlic-Core] 203

7.1.4 BS RF requirements [NR\_unlic-Core] 205

7.1.4.1 General [NR\_unlic-Core] 205

7.1.4.2 Transmitter characteristics [NR\_unlic-Core] 213

7.1.4.3 Receiver characteristics [NR\_unlic-Core] 214

7.1.5 BS conformance testing [NR\_unlic-Perf] 215

7.1.5.1 General [NR\_unlic-Perf] 215

7.1.5.2 Transmitter characteristics [NR\_unlic-Perf] 216

7.1.5.3 Receiver characteristics [NR\_unlic-Perf] 217

7.1.6 RRM core requirements maintenance (38.133) [NR\_unlic-Core] 217

7.1.6.1 General [NR\_unlic-Core] 226

7.1.6.2 Cell re-selection [NR\_unlic-Core] 228

7.1.6.3 Handover [NR\_unlic-Core] 228

7.1.6.4 RRC connection mobility control [NR\_unlic-Core] 228

7.1.6.5 SCell activation/deactivation (delay and interruption) [NR\_unlic-Core] 230

7.1.6.6 Active TCI state switching [NR\_unlic-Core] 233

7.1.6.7 Active BWP switching [NR\_unlic-Core] 235

7.1.6.8 RLM [NR\_unlic-Core] 235

7.1.6.9 Beam management [NR\_unlic-Core] 236

7.1.6.10 Measurement requirements [NR\_unlic-Core] 237

7.1.6.11 Measurement capability and reporting criteria [NR\_unlic-Core] 241

7.1.6.12 Timing [NR\_unlic-Core] 242

7.1.6.13 Other requirements [NR\_unlic-Core] 243

7.1.7 RRM perf. requirements (38.133) [NR\_unlic-Perf] 244

7.1.7.1 General [NR\_unlic-Perf] 251

7.1.7.2 Test cases [NR\_unlic-Perf] 254

7.1.8 Demodulation and CSI requirements (38.101-4/38.104) [NR\_unlic-Perf] 256

7.1.8.1 General [NR\_unlic-Perf] 256

7.1.8.2 UE demodulation requirements [NR\_unlic-Perf] 267

7.1.8.2.1 PDSCH requirements [NR\_unlic-Perf] 267

7.1.8.2.2 PDCCH requirements [NR\_unlic-Perf] 268

7.1.8.3 CSI requirements [NR\_unlic-Perf] 269

7.1.8.4 BS demodulation requirements [NR\_unlic-Perf] 269

7.1.8.4.1 PUSCH requirements [NR\_unlic-Perf] 270

7.1.8.4.2 PUCCH requirements [NR\_unlic-Perf] 271

7.1.8.4.3 PRACH requirements [NR\_unlic-Perf] 273

7.2 NR mobility enhancement [NR\_Mob\_enh] 274

7.2.1 RRM core requirements maintenance (38.133) [NR\_Mob\_enh-Core] 276

7.2.2 RRM perf. requirements (38.133) [NR\_Mob\_enh-Perf] 279

7.2.2.1 General [NR\_Mob\_enh-Perf] 279

7.2.2.2 Test cases [NR\_Mob\_enh-Perf] 279

7.3 5G V2X with NR sidelink [5G\_V2X\_NRSL] 282

7.3.1 General [5G\_V2X\_NRSL] 282

7.3.2 System parameters maintenance [5G\_V2X\_NRSL-Core] 283

7.3.3 UE RF requirements maintenance [5G\_V2X\_NRSL-Core] 283

7.3.3.1 Transmitter characteristics [5G\_V2X\_NRSL-Core] 284

7.3.3.2 Receiver characteristics [5G\_V2X\_NRSL-Core] 285

7.3.4 Concurrent operation maintenance (scenarios, requirements, etc) [5G\_V2X\_NRSL-Core] 286

7.3.4.1 Transmitter characteristics [5G\_V2X\_NRSL-Core] 287

7.3.4.2 Receiver characteristics [5G\_V2X\_NRSL-Core] 291

7.3.5 RRM core requirements maintenance (38.133) [5G\_V2X\_NRSL-Core] 291

7.3.6 RRM perf. requirements (38.133) [5G\_V2X\_NRSL-Perf] 297

7.3.6.1 General [5G\_V2X\_NRSL-Perf] 297

7.3.6.2 L1 SL-RSRP measurement accuracy [5G\_V2X\_NRSL-Perf] 299

7.3.6.3 Test cases [5G\_V2X\_NRSL-Perf] 299

7.3.6.3.1 UE transmit timing [5G\_V2X\_NRSL-Perf] 299

7.3.6.3.2 Initiation/Cease of SLSS Transmission [5G\_V2X\_NRSL-Perf] 300

7.3.6.3.3 Selection / Reselection of V2X Synchronization Reference Source [5G\_V2X\_NRSL-Perf] 301

7.3.6.3.4 L1 SL-RSRP measurements [5G\_V2X\_NRSL-Perf] 301

7.3.6.3.5 Congestion control measurements [5G\_V2X\_NRSL-Perf] 303

7.3.6.3.6 Interruptions [5G\_V2X\_NRSL-Perf] 303

7.3.6.3.7 Others [5G\_V2X\_NRSL-Perf] 304

7.3.7 Demodulation and CSI requirements (38.101-4) [5G\_V2X\_NRSL-Perf] 304

7.3.7.1 General [5G\_V2X\_NRSL-Perf] 304

7.3.7.2 Single link test [5G\_V2X\_NRSL-Perf] 307

7.3.7.3 Multiple link test [5G\_V2X\_NRSL-Perf] 309

7.4 Integrated Access and Backhaul for NR [NR\_IAB] 311

7.4.1 General [NR\_IAB-Core] 311

7.4.1.1 System parameters maintenance [NR\_IAB-Core] 320

7.4.1.2 Others [NR\_IAB-Core] 322

7.4.2 RF requirements maintenance [NR\_IAB-Core] 323

7.4.2.1 Transmitter characteristics [NR\_IAB-Core] 327

7.4.2.1.1 Tx Power related requirements [NR\_IAB-Core] 327

7.4.2.1.2 Transmitted signal quality [NR\_IAB-Core] 328

7.4.2.1.3 Unwanted emissions [NR\_IAB-Core] 330

7.4.2.1.4 Others [NR\_IAB-Core] 331

7.4.2.2 Receiver characteristics [NR\_IAB-Core] 331

7.4.2.2.1 Sensitivity and dynamic range requirements [NR\_IAB-Core] 331

7.4.2.2.2 In-band selectivity and blocking requirements [NR\_IAB-Core] 332

7.4.2.2.3 Others [NR\_IAB-Core] 334

7.4.3 RF conformance testing [NR\_IAB-Perf] 335

7.4.3.1 General and work plan [NR\_IAB-Perf] 335

7.4.3.2 Common test issues for conducted and radiated conformance testing [NR\_IAB-Perf] 338

7.4.3.2.1 Test configurations [NR\_IAB-Perf] 338

7.4.3.2.2 Test models [NR\_IAB-Perf] 339

7.4.3.2.3 Others [NR\_IAB-Perf] 339

7.4.3.3 Conducted conformance testing [NR\_IAB-Perf] 339

7.4.3.3.1 Transmitter characteristics [NR\_IAB-Perf] 339

7.4.3.3.2 Receiver characteristics [NR\_IAB-Perf] 340

7.4.3.3.3 Other test issues [NR\_IAB-Perf] 341

7.4.3.4 Radiated conformance testing [NR\_IAB-Perf] 341

7.4.3.4.1 Transmitter characteristics [NR\_IAB-Perf] 341

7.4.3.4.2 Receiver characteristics [NR\_IAB-Perf] 341

7.4.3.4.3 Other test issues [NR\_IAB-Perf] 341

7.4.4 RRM core requirements maintenance [NR\_IAB-Core] 341

7.4.5 RRM perf. requirements [NR\_IAB-Perf] 346

7.4.5.1 General [NR\_IAB-Perf] 346

7.4.5.2 Test cases [NR\_IAB-Perf] 348

7.4.6 EMC core requirements maintenance [NR\_IAB-Core] 349

7.4.6.1 General [NR\_IAB-Core] 349

7.4.6.2 Emission requirements [NR\_IAB-Core] 350

7.4.6.3 Immunity requirements [NR\_IAB-Core] 351

7.4.7 EMC performance requirements [NR\_IAB-Perf] 352

7.4.8 Demodulation and CSI requirements [NR\_IAB-Perf] 353

7.4.8.1 General [NR\_IAB-Perf] 353

7.4.8.2 IAB-DU performance requirements [NR\_IAB-Perf] 354

7.4.8.3 IAB-MT performance requirements [NR\_IAB-Perf] 355

7.5 Multi-RAT Dual-Connectivity and Carrier Aggregation enhancements [LTE\_NR\_DC\_CA\_enh] 356

7.5.1 RF requirements maintenance [LTE\_NR\_DC\_CA\_enh-Core] 356

7.5.2 RRM core requirements maintenance (38.133/36.133) [LTE\_NR\_DC\_CA\_enh-Core] 359

7.5.2.1 Early Measurement reporting [LTE\_NR\_DC\_CA\_enh-Core] 369

7.5.2.2 Efficient and low latency serving cell configuration, activation and setup [LTE\_NR\_DC\_CA\_enh-Core] 373

7.5.3 RRM perf. requirements (38.133) [LTE\_NR\_DC\_CA\_enh-Perf] 377

7.5.3.1 General [LTE\_NR\_DC\_CA\_enh-Perf] 378

7.5.3.2 Test cases [LTE\_NR\_DC\_CA\_enh-Perf] 380

7.5.4 Demodulation and CSI requirements (38.101-4) [LTE\_NR\_DC\_CA\_enh-Perf] 381

7.6 UE power saving in NR [NR\_UE\_pow\_sav] 382

7.6.1 RRM core requirements maintenance (38.133) [NR\_UE\_pow\_sav-Core] 384

7.6.2 RRM perf. requirements (38.133) [NR\_UE\_pow\_sav-Perf] 387

7.6.2.1 General [NR\_UE\_pow\_sav-Perf] 388

7.6.2.2 Test cases [NR\_UE\_pow\_sav-Perf] 388

7.6.3 Demodulation and CSI requirements (38.101-4) [NR\_UE\_pow\_sav-Perf] 393

7.7 NR Positioning Support [NR\_pos] 396

7.7.1 General [NR\_pos-Core/Perf] 396

7.7.2 RRM core requirements maintenance (38.133) [NR\_pos-Core] 396

7.7.2.1 PRS-RSTD measurement requirements [NR\_pos-Core] 401

7.7.2.2 PRS-RSRP measurement requirements [NR\_pos-Core] 404

7.7.2.3 UE Rx-Tx time difference measurement requirements [NR\_pos-Core] 406

7.7.2.4 Other requirements [NR\_pos-Core] 408

7.7.3 RRM perf. requirements (38.133) [NR\_pos-Perf] 412

7.7.3.1 General [NR\_pos-Perf] 417

7.7.3.2 UE requirements and test cases [NR\_pos-Perf] 418

7.7.3.2.1 Measurement accuracy requirements [NR\_pos-Perf] 418

7.7.3.2.1.1 PRS RSTD [NR\_pos-Perf] 418

7.7.3.2.1.2 PRS RSRP [NR\_pos-Perf] 420

7.7.3.2.1.3 UE Rx-Tx time difference [NR\_pos-Perf] 423

7.7.3.2.2 Test cases [NR\_pos-Perf] 425

7.7.3.2.3 Other [NR\_pos-Perf] 426

7.7.3.3 gNB requirements [NR\_pos-Perf] 427

7.8 Physical layer enhancements for NR URLLC [NR\_L1enh\_URLLC-Core] 433

7.8.1 Demodulation and CSI requirements (38.101-4/38.104) [NR\_L1enh\_URLLC-Perf] 433

7.8.1.1 Performance requirements with ultra-low BLER [NR\_L1enh\_URLLC-Perf] 440

7.8.1.1.1 UE demodulation requirements [NR\_L1enh\_URLLC-Perf] 441

7.8.1.1.2 CSI requirements [NR\_L1enh\_URLLC-Perf] 443

7.8.1.1.3 BS demodulation requirements [NR\_L1enh\_URLLC-Perf] 446

7.8.1.2 Performance requirements with higher BLER [NR\_L1enh\_URLLC-Perf] 450

7.8.1.2.1 UE demodulation requirements [NR\_L1enh\_URLLC-Perf] 452

7.8.1.2.2 BS demodulation requirements [NR\_L1enh\_URLLC-Perf] 456

7.9 Enhancements on MIMO for NR [NR\_eMIMO] 463

7.9.1 UE RF core requirements maintenance (38.101) [NR\_eMIMO-Core] 463

7.9.1.1 DMRS enhancement with PI/2 BPSK [NR\_eMIMO-Core] 464

7.9.1.2 Uplink Tx Full Power transmission [NR\_eMIMO-Core] 464

7.9.2 RRM core requirements maintenance (38.133) [NR\_eMIMO-Core] 464

7.9.3 RRM perf. requirements (38.133) [NR\_eMIMO-Perf] 470

7.9.3.1 General [NR\_eMIMO-Perf] 471

7.9.3.2 L1-SINR measurement accuracy [NR\_eMIMO-Perf] 471

7.9.3.3 Test cases [NR\_eMIMO-Perf] 473

7.9.3.3.1 L1-SINR measurements [NR\_eMIMO-Perf] 473

7.9.3.3.2 BFR for SCell [NR\_eMIMO-Perf] 475

7.9.3.3.3 DL/UL beam indication with reduced latency and overhead [NR\_eMIMO-Perf] 476

7.9.3.3.4 Others [NR\_eMIMO-Perf] 477

7.9.4 Demodulation and CSI requirements (38.101-4) [NR\_eMIMO-Perf] 477

7.9.4.1 General [NR\_eMIMO-Perf] 477

7.9.4.2 Demodulation requirements [NR\_eMIMO-Perf] 482

7.9.4.2.1 Single-DCI based SDM scheme [NR\_eMIMO-Perf] 483

7.9.4.2.2 Multi-DCI based transmission scheme [NR\_eMIMO-Perf] 484

7.9.4.2.3 Single-DCI based transmission schemes (URLLC) [NR\_eMIMO-Perf] 486

7.9.4.3 CSI requirements [NR\_eMIMO-Perf] 487

7.10 Add support of NR DL 256QAM for FR2 [NR\_DL256QAM\_FR2] 489

7.10.1 Demodulation and CSI requirements (38.101-4) [NR\_DL256QAM\_FR2-Perf] 489

7.10.1.1 UE Demodulation requirements [NR\_DL256QAM\_FR2-Perf] 492

7.10.1.2 SDR requirements [NR\_DL256QAM\_FR2-Perf] 494

7.10.1.3 CSI requirements [NR\_DL256QAM\_FR2-Perf] 496

7.11 RF requirements for NR frequency range 1 (FR1) [NR\_RF\_FR1] 497

7.11.1 RF core requirements maintenance [NR\_RF\_FR1-Core ] 497

7.11.1.1 Intra-band contiguous DL CA for FR1 [NR\_RF\_FR1-Core] 498

7.11.1.2 Intra-band UL CA for FR1 power class 3 [NR\_RF\_FR1-Core] 498

7.11.1.3 DC location for intra-band UL CA [NR\_RF\_FR1-Core] 500

7.11.1.4 Switching period between case 1 and case 2 [NR\_RF\_FR1-Core] 502

7.11.2 RRM core requirements maintenance (38.133) [NR\_RF\_FR1-Core] 504

7.11.3 RRM perf. requirements (38.133) [NR\_RF\_FR1-Perf] 507

7.11.3.1 General [NR\_RF\_FR1-Perf] 508

7.11.3.2 Test cases [NR\_RF\_FR1-Perf] 508

7.12 NR RF requirement enhancements for frequency range 2 (FR2) [NR\_RF\_FR2\_req\_enh] 510

7.12.1 RF core requirements maintenance [NR\_RF\_FR2\_req\_enh-Core] 510

7.12.1.1 Beam Correspondence based on configured DL RS (SSB or CSI-RS) [NR\_RF\_FR2\_req\_enh-Core] 510

7.12.1.2 Others [NR\_RF\_FR2\_req\_enh-Core] 513

7.12.2 RRM core requirements maintenance (38.133) [NR\_RF\_FR2\_req\_enh-Core] 516

7.13 NR RRM requirement enhancement [NR\_RRM\_Enh-Core] 516

7.13.1 RRM core requirements maintenance (38.133) [NR\_RRM\_Enh-Core] 533

7.13.1.1 SRS carrier switching requirements [NR\_RRM\_Enh\_Core] 533

7.13.1.2 CGI reading requirements with autonomous gap [NR\_RRM\_Enh\_Core] 534

7.13.1.3 BWP switching on multiple CCs [NR\_RRM\_Enh\_Core] 537

7.13.1.4 Spatial relation switch for uplink [NR\_RRM\_Enh\_Core] 541

7.13.1.5 Inter-band CA requirement for FR2 UE measurement capability of independent Rx beam and/or common beam [NR\_RRM\_Enh\_Core] 542

7.13.1.6 Other requirements maintenance [NR\_RRM\_Enh\_Core] 544

7.13.2 RRM perf. requirements (38.133) [NR\_RRM\_Enh-Perf] 549

7.13.2.1 General [NR\_RRM\_Enh-Perf] 549

7.13.2.2 Test cases [NR\_RRM\_Enh-Perf] 550

7.13.2.2.1 SRS carrier switching requirements [NR\_RRM\_Enh-Perf] 550

7.13.2.2.2 Multiple Scell activation/deactivation [NR\_RRM\_Enh-Perf] 553

7.13.2.2.3 CGI reading requirements with autonomous gap [NR\_RRM\_Enh-Perf] 555

7.13.2.2.4 BWP switching on multiple CCs [NR\_RRM\_Enh-Perf] 558

7.13.2.2.5 Inter-frequency measurement requirement without MG [NR\_RRM\_Enh-Perf] 560

7.13.2.2.6 Mandatory MG patterns [NR\_RRM\_Enh-Perf] 563

7.13.2.2.7 UE-specific CBW change [NR\_RRM\_Enh-Perf] 565

7.13.2.2.8 Spatial relation switch for uplink [NR\_RRM\_Enh-Perf] 567

7.13.2.2.9 Inter-band CA requirement for FR2 UE measurement capability of independent Rx beam [NR\_RRM\_Enh-Perf] 569

7.14 NR RRM requirements for CSI-RS based L3 measurement [NR\_CSIRS\_L3meas] 570

7.14.1 RRM core requirements maintenance (38.133) [NR\_CSIRS\_L3meas-Core] 579

7.14.2 RRM perf. requirements (38.133) [NR\_CSIRS\_L3meas-Perf] 588

7.14.2.1 General [NR\_CSIRS\_L3meas-Perf] 590

7.14.2.1.1 CSI-RSRP requirements [NR\_CSIRS\_L3meas -Perf] 592

7.14.2.1.2 CSI-RSRQ requirements [NR\_CSIRS\_L3meas -Perf] 595

7.14.2.1.3 CSI-SINR requirements [NR\_CSIRS\_L3meas -Perf] 597

7.14.2.2 Test cases [NR\_CSIRS\_L3meas-Perf] 599

7.15 NR support for high speed train scenario [NR\_HST] 606

7.15.1 RRM core requirements maintenance (38.133) [NR\_HST-Core] 606

7.15.2 RRM perf. requirements (38.133) [NR\_HST-Perf] 610

7.15.2.1 General [NR\_HST-Perf] 611

7.15.2.2 Test cases [NR\_HST-Perf] 613

7.15.3 Demodulation and CSI requirements (38.101-4 / 38.104) [NR\_HST-Perf] 616

7.15.3.1 UE demodulation and CSI requirements [NR\_HST-Perf] 621

7.15.3.1.1 Requirements for DPS transmission scheme(s) [NR\_HST-Perf] 622

7.15.3.1.2 Requirements for HST-SFN [NR\_HST-Perf] 625

7.15.3.1.3 Requirements for HST single tap [NR\_HST-Perf] 627

7.15.3.1.4 Requirements for multi-path fading channels [NR\_HST-Perf] 629

7.15.3.1.5 Applicability rule [NR\_HST-Perf] 629

7.15.3.2 BS demodulation requirements [NR\_HST-Perf] 630

7.15.3.2.1 PUSCH requirements [NR\_HST-Perf] 631

7.15.3.2.2 PRACH requirements [NR\_HST-Perf] 634

7.15.3.2.3 UL timing adjustment requirements [NR\_HST-Perf] 638

7.16 NR performance requirement enhancement [NR\_perf\_enh-Perf] 641

7.16.1 UE demodulation and CSI requirements (38.101-4) [NR\_perf\_enh-Perf] 646

7.16.1.1 NR CA PDSCH requirements [NR\_perf\_enh-Perf] 646

7.16.1.2 PMI reporting requirements with larger number of Tx ports [NR\_perf\_enh-Perf] 650

7.16.1.3 FR1 CA and EN-DC power imbalance requirements [NR\_perf\_enh-Perf] 652

7.16.1.4 NR CA CQI reporting requirements [NR\_perf\_enh-Perf] 654

7.16.1.5 Release independent [NR\_perf\_enh-Perf] 656

7.16.2 BS demodulation requirements (38.104) [NR\_perf\_enh-Perf] 658

7.17 Over the air (OTA) base station (BS) testing TR [OTA\_BS\_testing-Perf] 658

7.17.1 General [OTA\_BS\_testing-Perf] 658

7.17.2 MU / TT values: derivation and tables [OTA\_BS\_testing-Perf] 660

7.17.3 Annexes [OTA\_BS\_testing-Perf] 662

7.17.4 Others [OTA\_BS\_testing-Perf] 663

7.18 2-step RACH for NR [NR\_2step\_RACH-Perf] 665

7.18.1 RRM core requirements maintenance (38.133) [NR\_2step\_RACH-Core] 665

7.18.2 RRM perf. requirements (38.133) [NR\_2step\_RACH-Perf] 666

7.18.2.1 General [NR\_2step\_RACH-Perf] 666

7.18.2.2 Test cases [NR\_2step\_RACH-Perf] 667

7.18.3 BS Demodulation requirements (38.104) [NR\_2step\_RACH-Perf] 669

7.18.4 Others [NR\_2step\_RACH-Perf] 677

7.19 R16 NR maintenance [WI code or TEI16] 677

7.19.1 UE transient period capability [TEI16] 677

7.19.2 Transmit diversity and power class related to UL MIMO [TEI16] 679

7.19.2.1 R16 support of transmit diversity [TEI16] 680

7.19.2.2 Power class related to UL MIMO and other related req. (MPR, SEM, etc) [TEI16 or NR\_newRAT-Core] 683

7.19.3 Other UE RF [WI code or TEI16] 684

7.19.4 BS RF [WI code or TEI16] 703

7.19.5 RRM [WI code or TEI16] 708

7.19.6 Demodulation and CSI [WI code or TEI16] 712

7.19.7 NR MIMO OTA test methods (38.827) [FS\_NR\_MIMO\_OTA\_test] 712

8 Rel-16 UE feature list 715

9 Rel-16 spectrum related Work Items for NR 722

9.1 LTE/NR spectrum sharing in band 48/n48 frequency range [NR\_n48\_LTE\_48\_coex-Core] 722

9.1.1 General [NR\_n48\_LTE\_48\_coex-Core] 723

9.1.2 Channel raster, sync raster, and UL shift [NR\_n48\_LTE\_48\_coex-Core] 723

10 Rel-17 spectrum related Work Items for NR 724

10.1 NR intra band Carrier Aggregation for xCC DL/yCC UL including contiguous and non-contiguous spectrum (x>=y) [NR\_CA\_R17\_intra] 724

10.1.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R17\_intra-Core /Perf] 724

10.1.2 UE RF for FR1 [NR\_CA\_R17\_intra-Core] 725

10.1.3 UE RF for FR2 [NR\_CA\_R17\_intra-Core] 728

10.2 NR inter-band Carrier Aggregation/Dual Connectivity for 2 bands DL with x bands UL (x=1, 2) [NR\_CADC\_R17\_2BDL\_xBUL] 728

10.2.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R17\_2BDL\_xBUL-Core/Perf] 728

10.2.2 NR inter band CA without any FR2 band(s) [NR\_CADC\_R17\_2BDL\_xBUL-Core] 729

10.2.3 NR inter band CA with at least one FR2 band [NR\_CADC\_R17\_2BDL\_xBUL-Core] 736

10.3 DC of 1 LTE band and 1 NR band [DC\_R17\_1BLTE\_1BNR\_2DL2UL] 738

10.3.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_1BLTE\_1BNR\_2DL2UL-Core/Perf] 738

10.3.2 EN-DC without FR2 band [DC\_R17\_1BLTE\_1BNR\_2DL2UL-Core] 739

10.3.3 EN-DC with FR2 band [DC\_R17\_1BLTE\_1BNR\_2DL2UL-Core] 744

10.4 DC of 2 LTE band and 1 NR band [DC\_R17\_2BLTE\_1BNR\_3DL2UL] 745

10.4.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_2BLTE\_1BNR\_3DL2UL-Core/Perf] 746

10.4.2 EN-DC without FR2 band [DC\_R17\_2BLTE\_1BNR\_3DL2UL-Core] 747

10.4.3 DMEN-DC with FR2 band [DC\_R17\_2BLTE\_1BNR\_3DL2UL-Core] 759

10.5 DC of 3 LTE band and 1 NR band [DC\_R17\_3BLTE\_1BNR\_4DL2UL] 762

10.5.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_3BLTE\_1BNR\_4DL2UL-Core/Perf] 764

10.5.2 EN-DC without FR2 band [DC\_R17\_3BLTE\_1BNR\_4DL2UL-Core] 764

10.5.3 EN-DC with FR2 band [DC\_R17\_3BLTE\_1BNR\_4DL2UL-Core] 774

10.6 DC of 4 LTE band and 1 NR band [DC\_R17\_4BLTE\_1BNR\_5DL2UL] 775

10.6.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_4BLTE\_1BNR\_5DL2UL-Core/Perf] 775

10.6.2 EN-DC without FR2 band [DC\_R17\_4BLTE\_1BNR\_5DL2UL-Core] 776

10.6.3 EN-DC with FR2 band [DC\_R17\_4BLTE\_1BNR\_5DL2UL-Core] 780

10.7 DC of x bands (x=1,2, 3, 4) LTE inter-band CA and 2 bands NR inter-band CA [DC\_R17\_xBLTE\_2BNR\_yDL2UL] 780

10.7.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_xBLTE\_2BNR\_yDL2UL-Core/Per] 780

10.7.2 EN-DC including NR inter CA without FR2 band [DC\_R17\_xBLTE\_2BNR\_yDL2UL-Core] 781

10.7.3 EN-DC including NR inter CA with FR2 band [DC\_R17\_xBLTE\_2BNR\_yDL2UL-Core] 818

10.8 Band combinations for SA NR supplementary uplink (SUL), NSA NR SUL, NSA NR SUL with UL sharing from the UE perspective (ULSUP) [NR\_SUL\_combos\_R17] 822

10.8.1 Rapporteur Input (WID/TR/CR) [NR\_SUL\_combos\_R17-Core/Per] 822

10.8.2 UE RF [NR\_SUL\_combos\_R17-Core] 823

10.9 NR Inter-band Carrier Aggregation for 3 bands DL with 1 band UL [NR\_CA\_R17\_3BDL\_1BUL] 826

10.9.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R17\_3BDL\_1BUL-Core/Per] 826

10.9.2 UE RF [NR\_CA\_R17\_3BDL\_1BUL-Core] 826

10.10 NR Inter-band Carrier Aggregation for 4 bands DL with 1 band UL [NR\_CA\_R17\_4BDL\_1BUL] 832

10.10.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R17\_4BDL\_1BUL-Core/Per] 832

10.10.2 UE RF [NR\_CA\_R17\_4BDL\_1BUL-Core] 833

10.11 NR Inter-band Carrier Aggregation/Dual connectivity for 3 bands DL with 2 bands UL [NR\_CADC\_R17\_3BDL\_2BUL] 834

10.11.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R17\_3BDL\_2BUL-Core/Per] 834

10.11.2 UE RF [NR\_CADC\_R17\_3BDL\_2BUL-Core] 835

10.12 DC of x bands (x=1,2) LTE inter-band CA (xDL/xUL) and y bands (y=3-x) NR inter-band CA [DC\_R17\_xBLTE\_yBNR\_3DL3UL] 841

10.12.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_xBLTE\_yBNR\_3DL3UL-Core/Per] 841

10.12.2 UE RF [DC\_R17\_xBLTE\_yBNR\_3DL3UL-Core] 842

10.13 DC of x bands (x=1,2,3) LTE inter-band CA (xDL/1UL) and 3 bands NR inter-band CA (3DL/1UL) [DC\_R17\_xBLTE\_3BNR\_yDL2UL] 842

10.13.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_xBLTE\_3BNR\_yDL2UL -Core/Per] 842

10.13.2 UE RF [DC\_R17\_xBLTE\_3BNR\_yDL2UL-Core] 842

10.14 NR inter-band Carrier Aggregation and Dual connectivity for DL 4 bands and 2UL bands [NR\_CADC\_R17\_4BDL\_2BUL] 844

10.14.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R17\_4BDL\_2BUL -Core/Per] 844

10.14.2 UE RF [NR\_CADC\_R17\_4BDL\_2BUL -Core] 845

10.15 NR inter-band CA for 5 bands DL with x bands UL (x=1, 2) [NR\_CADC\_R17\_5BDL\_xBUL\_3DL3UL] 846

10.15.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R17\_5BDL\_xBUL -Core/Per] 846

10.15.2 UE RF [NR\_CADC\_R17\_5BDL\_xBUL -Core] 847

10.16 DC of 5 bands LTE inter-band CA (5DL/1L) and 1 NR band (1DL/1UL) [DC\_R17\_5BLTE\_1BNR\_6DL2UL] 847

10.16.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_5BLTE\_1BNR\_6DL2UL-Core/Per] 847

10.16.2 UE RF [DC\_R17\_5BLTE\_1BNR\_6DL2UL-Core] 848

10.17 DC of x bands (x=2,3,4) LTE inter-band CA (xDL/1UL) and 1 NR FR1 band (1DL/1UL) and 1 NR FR2 band (1DL/1UL) [DC\_R17\_xBLTE\_2BNR\_yDL3UL] 848

10.17.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_xBLTE\_2BNR\_yDL3UL-Core/Per] 848

10.17.2 UE RF [DC\_R17\_xBLTE\_2BNR\_yDL3UL-Core] 849

10.18 SAR schemes for UE power class 2 (PC2) for NR inter-band Carrier Aggregation and supplemental uplink (SUL) configurations with 2 bands UL [NR\_SAR\_PC2\_interB\_SUL\_2BUL] 851

10.18.1 General and Rapporteur Input (WID/TR/CR) [NR\_SAR\_PC2\_interB\_SUL\_2BUL-Core/Per] 852

10.18.2 PC2 for inter-band CA [NR\_SAR\_PC2\_interB\_SUL\_2BUL-Core] 852

10.18.3 PC2 for SUL [NR\_SAR\_PC2\_interB\_SUL\_2BUL-Core] 854

10.19 High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink [NR\_PC2\_CA\_R17\_2BDL\_2BUL] 856

10.19.1 Rapporteur Input (WID/TR/CR) [NR\_PC2\_CA\_R17\_2BDL\_2BUL-Core/Per] 856

10.19.2 UE RF [NR\_PC2\_CA\_R17\_2BDL\_2BUL-Core] 857

10.20 High power UE (power class 2) for EN-DC with 1 LTE band + 1 NR TDD band [ENDC\_UE\_PC2\_R17\_NR\_TDD] 858

10.20.1 Rapporteur Input (WID/TR/CR) [ENDC\_UE\_PC2\_R17\_NR\_TDD -Core/Per] 859

10.20.2 UE RF [ENDC\_UE\_PC2\_R17\_NR\_TDD -Core] 860

10.21 Adding channel bandwidth support to existing NR bands [NR\_bands\_R17\_BWs] 861

10.21.1 General and Rapporteur Input (WID/TR/CR) [NR\_bands\_R17\_BWs -Core/Per] 862

10.21.2 UE RF requirement [NR\_bands\_R17\_BWs -Core] 863

10.21.2.1 Reference sensitivity [NR\_bands\_R17\_BWs -Core] 864

10.21.2.2 MPR/A-MPR/NS signaling [NR\_bands\_R17\_BWs -Core] 864

10.21.2.3 others [NR\_bands\_R17\_BWs -Core] 865

10.21.3 BS RF requirement [NR\_bands\_R17\_BWs -Core] 865

10.22 Introduction of channel bandwidths 35MHz and 45MHz for NR [NR\_FR1\_35MHz\_45MHz\_BW] 865

10.22.1 General and Rapporteur Input (WID/TR/CR) [NR\_FR1\_35MHz\_45MHz\_BW-Core/Per] 867

10.22.2 Spectrum utilization [NR\_FR1\_35MHz\_45MHz\_BW-Core] 868

10.22.3 UE RF requirements [NR\_FR1\_35MHz\_45MHz\_BW-Core] 868

10.22.4 BS RF requirements [NR\_FR1\_35MHz\_45MHz\_BW-Core] 871

10.22.5 Others [NR\_FR1\_35MHz\_45MHz\_BW-Core] 874

10.23 Band combinations for Uu and V2X con-current operation [NR\_LTE\_V2X\_PC5\_combos] 874

10.23.1 General and Rapporteur Input (WID/TR/CR) [NR\_LTE\_V2X\_PC5\_combos-Core/Per] 875

10.23.2 UE RF requirement for concurrent operation between NR Uu band and NR PC5 band [NR\_LTE\_V2X\_PC5\_combos-Core] 876

10.23.3 UE RF requirement for concurrent operation between LTE Uu band and NR PC5 band [NR\_LTE\_V2X\_PC5\_combos-Core] 877

10.23.4 UE RF requirement for concurrent operation between NR Uu band and LTE PC5 band [NR\_LTE\_V2X\_PC5\_combos-Core] 878

10.23.5 UE RF requirement for concurrent operation of LTE/NR CA/DC band combinations + PC5 V2X [NR\_LTE\_V2X\_PC5\_combos-Core] 878

10.24 Introduction of FR2 FWA UE with maximum TRP of 23dBm for band n257 and n258 [NR\_FR2\_FWA\_Bn257\_Bn258] 878

10.24.1 UE RF (38.101-2) [NR\_FR2\_FWA\_Bn257\_Bn258-Core] 878

10.24.2 RRM Core requirements (38.133) [NR\_FR2\_FWA\_Bn257\_Bn258-Core] 881

10.24.3 RRM Perf. requirements (38.133) [NR\_FR2\_FWA\_Bn257\_Bn258-Perf] 882

10.24.4 Others [NR\_FR2\_FWA\_Bn257\_Bn258-Core/Perf] 883

10.25 Introduction of NR band n13 [NR\_n13] 883

10.25.1 UE RF (38.101-1) [NR\_n13-Core] 884

10.25.2 BS RF (38.104) [NR\_n13-Core] 884

10.25.3 RRM (38.133) [NR\_n13-Core] 887

10.25.4 Others [NR\_n13-Core/Perf] 887

10.26 Introduction of 1880-1920MHz SUL band for NR [NR\_SUL\_band\_1880\_1920MHz] 887

10.26.1 UE RF (38.101-1) [NR\_SUL\_band\_1880\_1920MHz-Core] 887

10.26.2 BS RF (38.104) [NR\_SUL\_band\_1880\_1920MHz -Core] 888

10.26.3 RRM (38.133) [NR\_SUL\_band\_1880\_1920MHz -Core] 891

10.26.4 Others [NR\_SUL\_band\_1880\_1920MHz -Core/Perf] 891

10.27 Introduction of 2300-2400MHz SUL band for NR [NR\_SUL\_band\_2300\_2400MHz] 891

10.27.1 UE RF (38.101-1) [NR\_SUL\_band\_2300\_2400MHz -Core] 891

10.27.2 BS RF (38.104) [NR\_SUL\_band\_2300\_2400MHz -Core] 891

10.27.3 RRM (38.133) [NR\_SUL\_band\_2300\_2400MHz -Core] 894

10.27.4 Others [NR\_SUL\_band\_2300\_2400MHz -Core/Perf] 894

10.28 Introduction of NR 47 GHz band [NR\_47GHz\_Band] 894

10.28.1 UE RF (38.101-2) [NR\_47GHz\_Band -Core] 895

10.28.2 BS RF (38.104) [NR\_47GHz\_Band -Core] 897

10.28.3 RRM (38.133) [NR\_47GHz\_Band -Core] 898

10.28.4 Others [NR\_47GHz\_Band -Core/Perf] 899

10.29 Introduction of NR band n24 [NR\_band\_n24] 900

10.29.1 UE RF (38.101-1) [NR\_band\_n24-Core] 900

10.29.2 BS RF (38.104) [NR\_band\_n24-Core] 901

10.29.3 RRM (38.133) [NR\_band\_n24-Core] 902

10.29.4 Others [NR\_band\_n24-Core/Perf] 902

10.30 Introduction of 1.6 GHz NR SUL band with same uplink frequency range of Band 24 [NR\_SUL\_UL\_n24] 904

10.30.1 UE RF (38.101-1) [NR\_SUL\_UL\_n24-Core] 905

10.30.2 BS RF (38.104) [NR\_SUL\_UL\_n24-Core] 905

10.30.3 RRM (38.133) [NR\_SUL\_UL\_n24-Core] 908

10.30.4 Others [NR\_SUL\_UL\_n24-Core/Perf] 908

11 Reply to ITU-R LS (RP-200042) 911

11.1 Study on IMT parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz [FS\_6425\_10500MHz \_NR] 911

11.1.1 UE parameters 912

11.1.2 BS parameters 913

11.1.3 Coexistence study 915

11.1.3.1 Simulation assumptions 915

11.1.3.2 Downlink 916

11.1.3.3 Uplink 917

11.1.4 Antenna characteristics 919

11.1.5 Relevant information for the sharing and compatibility studies 920

12 Rel-17 non-spectrum related work items for NR 921

12.1 Multiple Input Multiple Output (MIMO) Over-the-Air (OTA) requirements for NR UEs [NR\_MIMO\_OTA] 921

12.1.1 General [NR\_MIMO\_OTA] 921

Sub-topic 1-2 Testing parameters for Performance 921

Sub-topic 1-3 Optimization of test methodologies 922

Sub-topic 1-4 channel model validation 923

Sub-topic 2-2 Performance metric for FR1 MIMO OTA 923

Sub-topic 2-4 Simulation issues for FR2 performance evaluation 924

Sub-topic 3-1 Number of slots for NR MIMO OTA testing 924

12.1.2 Performance Requirements [NR\_MIMO\_OTA-Core] 926

12.1.2.1 Performance Requirements for FR1 [NR\_MIMO\_OTA-Core] 927

12.1.2.2 Performance Requirements for FR2 [NR\_MIMO\_OTA-Core] 927

12.1.3 Testing methodologies [NR\_MIMO\_OTA-Core] 928

12.1.3.1 Testing parameters for Performance [NR\_MIMO\_OTA-Core] 929

12.1.3.2 Optimization of test methodologies [NR\_MIMO\_OTA-Core] 929

12.1.3.3 Channel model validation [NR\_MIMO\_OTA-Core] 930

12.2 RF requirements enhancement for NR frequency range 1 (FR1) [NR\_RF\_FR1\_enh] 931

12.2.1 General and work plan [NR\_RF\_FR1\_enh -Core] 931

12.2.2 RF core requirements [NR\_RF\_FR1\_enh -Core] 932

12.2.2.1 UL MIMO configuration for SUL band configurations [NR\_RF\_FR1\_enh -Core] 932

12.2.2.2 2Tx switching between carrier 1 and carrier 2 [NR\_RF\_FR1\_enh -Core] 934

12.2.2.3 Tx switching between 1 carrier on band A and 2 contiguous aggregated carriers on band B [NR\_RF\_FR1\_enh -Core] 936

12.2.2.4 HPUE for TDD intra-band contiguous UL CA [NR\_RF\_FR1\_enh -Core] 936

12.3 NR RF requirement enhancements for frequency range 2 (FR2) [NR\_RF\_FR2\_req\_enh2] 938

12.3.1 General and work plan [NR\_RF\_FR2\_req\_enh2-Core] 938

12.3.2 RF core requirements [NR\_RF\_FR2\_req\_enh2-Core] 939

12.3.2.1 Inter-band DL CA enhancements [NR\_RF\_FR2\_req\_enh2-Core] 939

12.3.2.1.1 Applicability of CBM/IBM for different CA configurations [NR\_RF\_FR2\_req\_enh2-Core] 940

12.3.2.1.2 Feasibility study for CA configurations within same frequency group based on IBM [NR\_RF\_FR2\_req\_enh2-Core] 941

12.3.2.1.3 Feasibility study for CA configurations between different frequency groups based on CBM [NR\_RF\_FR2\_req\_enh2-Core] 942

12.3.2.1.4 UE requirements for CA configurations CA\_n258A-n260A and CA\_n257A-n259A based on IBM [NR\_RF\_FR2\_req\_enh2-Core] 942

12.3.2.1.5 UE requirements for CA configurations within the same frequency group based on CBM [NR\_RF\_FR2\_req\_enh2-Core] 943

12.3.2.2 Inter-band UL CA [NR\_RF\_FR2\_req\_enh2-Core] 943

12.3.2.2.1 Feasibility study for CA configurations within same frequency group based on IBM and CBM [NR\_RF\_FR2\_req\_enh2-Core] 944

12.3.2.2.2 Feasibility study for CA configurations between different frequency groups based on CBM [NR\_RF\_FR2\_req\_enh2-Core] 944

12.3.2.2.3 UE requirements for CA configuration CA\_n257A-n259A based on IBM [NR\_RF\_FR2\_req\_enh2-Core] 944

12.3.2.3 UL gaps for self-calibration and monitoring [NR\_RF\_FR2\_req\_enh2-Core] 944

12.4 NR RRM further enhancement [NR\_RRM\_enh2-Core] 946

12.4.1 Work plan [NR\_RRM\_enh2-Core] 947

12.5 NR measurement gap enhancements [NR\_MG\_enh-Core] 947

12.5.1 Work plan [NR\_MG\_enh-Core] 948

12.6 Enhancement for NR high speed train scenario in FR1 [NR\_HST\_FR1\_enh-Core] 948

12.6.1 Work plan [NR\_HST\_FR1\_enh-Core] 949

12.7 NR support for high speed train scenario in FR2 [NR\_HST\_FR2\_enh] 949

12.7.1 General and work plan [NR\_HST\_FR2\_enh-Core] 950

12.7.2 High speed train deployment scenario in FR2 [NR\_HST\_FR2\_enh-Core] 952

12.7.3 UE RF core requirements [NR\_HST\_FR2\_enh-Core] 953

12.8 Solutions for NR to support non-terrestrial networks (NTN) [NR\_NTN\_solutions] 954

12.8.1 General and work plan [NR\_NTN\_solutions] 954

12.8.2 Use cases, deployment scenarios, and regulatory information [NR\_NTN\_solutions-Core] 955

12.8.3 Coexistence aspects [NR\_NTN\_solutions -Core] 957

12.8.3.1 Simulation assumptions [NR\_NTN\_solutions -Core] 957

12.8.3.2 UE requirements aspects [NR\_NTN\_solutions -Core] 958

12.8.3.3 BS requirements aspects [NR\_NTN\_solutions -Core] 958

12.8.4 RRM requirements [NR\_NTN\_solutions-Core] 958

12.9 UE Power Saving Enhancements [NR\_UE\_pow\_sav\_enh] 960

12.9.1 General and work plan [NR\_UE\_pow\_sav\_enh] 960

12.9.2 Feasibility and performance impact of relaxing UE measurements for RLM and/or BFD [NR\_UE\_pow\_sav\_enh] 961

12.10 NR Sidelink enhancement [NRSL\_enh] 963

12.10.1 General and work plan [NRSL\_enh] 964

12.10.2 Spectrum request for SL operation [NRSL\_enh-Core] 965

13 Rel-17 Study Items for NR 965

13.1 Study on enhanced test methods for FR2 in NR [FS\_FR2\_enhTestMethods] 965

13.1.1 Test methodology for high DL power and low UL power test cases [FS\_FR2\_enhTestMethods] 967

13.1.2 Polarization basis mismatch [FS\_FR2\_enhTestMethods] 969

13.1.3 Enhanced test methods for inter-band (FR2+FR2) CA [FS\_FR2\_enhTestMethods] 970

13.1.4 Extreme temperature conditions [FS\_FR2\_enhTestMethods] 971

13.1.5 Enhanced test methods for FR2 DL 256QAM RF [FS\_FR2\_enhTestMethods] 972

13.1.6 Test time reduction [FS\_FR2\_enhTestMethods] 972

13.1.7 Testability for band n262 [FS\_FR2\_enhTestMethods] 972

13.1.7.1 Extension of frequency applicability of permitted methods in 38.810 [FS\_FR2\_enhTestMethods] 972

13.1.7.2 Extension of frequency applicability of enhancement objectives 1-6 [FS\_FR2\_enhTestMethods] 973

13.2 Study on supporting NR from 52.6 GHz to 71 GHz [FS\_NR\_52\_to\_71GHz] 973

13.2.1 Numerology, Channel BW [FS\_NR\_52\_to\_71GHz] 973

13.2.1.1 General [FS\_NR\_52\_to\_71GHz] 974

13.2.1.2 Timing considerations [FS\_NR\_52\_to\_71GHz] 977

13.2.1.3 Phase noise and RF impairments related to response to RAN1 [FS\_NR\_52\_to\_71GHz] 978

13.2.2 BS aspect [FS\_NR\_52\_to\_71GHz] 979

13.2.3 UE aspect [FS\_NR\_52\_to\_71GHz] 981

13.2.4 Others [FS\_NR\_52\_to\_71GHz] 982

13.3 Study on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths [FS\_NR\_eff\_BW\_util] 982

13.3.1 General and work plan [FS\_NR\_eff\_BW\_util] 983

13.3.2 Input on operator licensed channel bandwidths in FR1 that do not align with existing NR channel bandwidths [FS\_NR\_eff\_BW\_util] 984

13.3.3 Evaluation of use of larger channel bandwidths than operator licensed bandwidth [FS\_NR\_eff\_BW\_util] 985

13.3.4 Evaluation of use of overlapping UE channel bandwidths (from both UE and network perspective) [FS\_NR\_eff\_BW\_util] 985

13.3.4.1 UE perspective [FS\_NR\_eff\_BW\_util] 986

13.3.4.2 Network perspective [FS\_NR\_eff\_BW\_util] 986

13.3.5 Others [FS\_NR\_eff\_BW\_util] 987

14 Rel-17 Work Items for LTE 987

14.1 LTE inter-band Carrier Aggregation for 2 bands DL with 1 band UL [LTE\_CA\_R17\_2BDL\_1BUL] 987

14.1.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_2BDL\_1BUL-Core/Perf] 987

14.1.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R17\_2BDL\_1BUL-Core] 988

14.1.3 UE RF without specific issues [LTE\_CA\_R17\_2BDL\_1BUL-Core] 988

14.2 LTE inter-band Carrier Aggregation for 3 bands DL with 1 band UL [LTE\_CA\_R17\_3BDL\_1BUL] 988

14.2.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_3BDL\_1BUL-Core/Perf] 989

14.2.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R17\_3BDL\_1BUL-Core] 990

14.2.3 UE RF without specific issues [LTE\_CA\_R17\_3BDL\_1BUL-Core] 990

14.3 LTE inter-band Carrier Aggregation for x bands DL (x=4, 5) with 1 band UL 990

14.3.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_xBDL\_1BUL-Core] 991

14.3.2 UE RF with 4 LTE bands CA [LTE\_CA\_R17\_xBDL\_1BUL-Core] 991

14.3.3 UE RF with 5 LTE bands CA [LTE\_CA\_R17\_xBDL\_1BUL-Core] 994

14.4 LTE inter-band Carrier Aggregation for 2 bands DL with 2 band UL [LTE\_CA\_R17\_2BDL\_2BUL] 995

14.4.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_2BDL\_2BUL-Core] 995

14.4.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R17\_2BDL\_2BUL-Core] 995

14.4.3 UE RF without specific issues [LTE\_CA\_R17\_2BDL\_2BUL-Core] 995

14.5 LTE inter-band Carrier Aggregation for x bands DL (x= 3, 4, 5) with 2 band UL 995

14.5.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_xBDL\_2BUL-Core] 995

14.5.2 UE RF with MSD [LTE\_CA\_R17\_xBDL\_2BUL-Core] 996

14.5.3 UE RF without MSD [LTE\_CA\_R17\_xBDL\_2BUL-Core] 996

14.6 RRM for LTE CA basket WIs [LTE\_CA\_R17\_xxxx] 996

14.6.1 RRM Core (36.133) [LTE\_CA\_R17\_xxxx-Core] 996

14.6.2 RRM Perf (36.133) [LTE\_CA\_R17\_xxxx-Perf] 996

14.7 New WID on Additional LTE bands for UE category M1&M2 and/or NB1&NB2 in Rel-17 [LTE\_bands\_R17\_M1\_M2\_NB1\_NB2] 997

14.7.1 Rapporteur Input (WID/TR/CR) [LTE\_bands\_R17\_M1\_M2\_NB1\_NB2-Core] 997

14.7.2 RF [LTE\_bands\_R17\_M1\_M2\_NB1\_NB2-Core] 1000

14.7.3 Others [LTE\_bands\_R17\_M1\_M2\_NB1\_NB2-Perf] 1000

14.8 Modification of LTE Band 24 specifications to comply with updated regulatory emission limits [LTE\_B24\_mod] 1001

14.8.1 General and rapporteur input [LTE\_B24\_mod-Core] 1001

14.8.2 UE RF [LTE\_B24\_mod-Core] 1001

14.8.3 BS RF [LTE\_B24\_mod-Core] 1001

14.8.4 RRM and others [LTE\_B24\_mod-Core/Perf] 1003

15 Rel-17 Study Items for LTE 1006

15.1 High-power UE operation for fixed-wireless/vehicle-mounted use cases in LTE bands 5 and 12 and NR band n71 [FS\_LTE\_NR\_HPUE\_FWVM] 1006

15.1.1 General 1007

15.1.2 Coexistence study 1008

15.1.3 UE RF 1008

16 Liaison and output to other groups 1008

16.1 R17 related 1008

16.2 Others 1008

17 Revision of the Work Plan 1008

17.1 Simplification of band combinations in RAN4 specifications 1008

17.2 R17 new proposals 1013

17.2.1 Spectrum related 1013

17.2.2 Non-spectrum related 1014

17.3 Others 1015

18 Any other business 1015

19 Close of the E-meeting 1017

Annex A: Contribution documents and status 1052

A1: List of TDocs 1052

A2: Tdoc decision timing 1154

Annex B: List of change requests 1158

C1: Incoming liaison statements 1204

C2: Outgoing liaison statements 1204

Annex E: List of draft Technical Specifications and Reports 1206

Annex H: List of participants 1207

## 1 Opening of the E-meeting

The Chairman Steven Chen (Apple) opened the meeting on RAN4 reflector on 2/11/2020.

**Intellectual Property Rights Policy**

The attention of the delegates to the meeting of this Technical Specification Group was drawn to the fact that 3GPP Individual Members have the obligation under the IPR Policies of their respective Organizational Partners to inform their respective Organizational Partners of Essential IPRs they become aware of.

The delegates were asked to take note that they were thereby invited:

- to investigate whether their organization or any other organization owns IPRs which were, or were likely to become Essential in respect of the work of 3GPP.

- to notify their respective Organizational Partners of all potential IPRs, e.g., for ETSI, by means of the IPR Information Statement and the Licensing declaration forms.

**Statement regarding competition law**

The attention of the delegates to the meeting was drawn to the fact that 3GPP activities were subject to all applicable antitrust and competition laws and that compliance with said laws was therefore required by any participant of the meeting, including the Chairman and Vice-Chairmen and were invited to seek any clarification needed with their legal counsel. The leadership would conduct the present meeting with impartiality and in the interests of 3GPP. Delegates were reminded that timely submission of work items in advance of TSG/WG meetings was important to allow for full and fair consideration of such matters.

**Meeting Arrangements**

The meeting was conducted on three parallel sessions; Main session, RRM session and BS RF Test Demod session. The Main session was chaired by RAN4 Chairman Steven Chen (Apple), RRM session was chaired by RAN4 Vice Chairman Andrey Chervyakov (Intel) and BS RF Test Demod session was chaired by RAN4 ViceChairman Haijie Qiu (Samsung). The sessions were further broken down into separate email threads to address specific technical topics lead by assigned discussion moderators. Webinar sessions were used to summarize progress, resolve controversial issues and decide way forward.

## 2 Approval of the agenda

**R4-2014000 Agenda for RAN4 #97-e**

*Type: Agenda For: Approval  
 Source: Apple (UK) Limited*

**Decision:** The document was **approved**.

**R4-2014001 RAN4#96-e Meeting Report**

*Type: report For: Approval  
 Source: ETSI MCC*

**Decision:** The document was **approved**.

**R4-2016599 RAN4#97-e E-meeting Arrangements and Guidelines**

*Type: other For: discussion  
 Source: RAN4 Chair (Apple)*

**Decision:** The document was **approved**.

**R4-2016602 RAN4 Meeting Efficiency Improvements**

*Type: other For: discussion  
 Source: RAN4 Leadership*

**Decision:** The document was **endorsed**.

## 3 Letters / reports from other groups / meetings

**R4-2014147 LS on updated Rel-16 RAN1 UE features lists for NR**

*Type: LS in For: Information  
 Original outgoing LS: R1-2007136, to RAN2, RAN4, cc -  
 Source: RAN1*

**Decision:** The document was **noted**.

**R4-2014148 LS on updated Rel-16 RAN1 UE features list for LTE**

*Type: LS in For: Information  
 Original outgoing LS: R1-2007139, to RAN2, RAN4, cc -  
 Source: RAN1*

**Decision:** The document was **noted**.

**R4-2014149 LS on updated Rel-16 RAN1 UE features lists for NR**

*Type: LS in For: Information  
 Original outgoing LS: R1-2007327, to RAN2, RAN4, cc -  
 Source: RAN1*

**Decision:** The document was **noted**.

**R4-2014150 LS on updated Rel-16 RAN1 UE features lists for LTE**

*Type: LS in For: Information  
 Original outgoing LS: R1-2007329, to RAN2, RAN4, cc -  
 Source: RAN1*

**Decision:** The document was **noted**.

**R4-2014151 Reply LS on UE capability**

*Type: LS in For: Information  
 Original outgoing LS: R1-2007339, to RAN2, cc RAN4  
 Source: RAN1*

**Decision:** The document was **noted**.

**R4-2014152 LS on evaluation methodology for connected mode UE power saving enhancements**

*Type: LS in For: Information  
 Original outgoing LS: R1-2007419, to RAN2, cc RAN4  
 Source: RAN1*

**Decision:** The document was **noted**.

**R4-2014153 Reply LS on UE declaring beam failure due to LBT failures during active TCI switching**

*Type: LS in For: Information  
 Original outgoing LS: R1-2007424, to RAN2, cc RAN4  
 Source: RAN1*

**Decision:** The document was **noted**.

**R4-2014154 LS on evaluation methodology for UE power saving enhancements**

*Type: LS in For: Information  
 Original outgoing LS: R1-2007425, to RAN2, cc RAN4  
 Source: RAN1*

**Decision:** The document was **noted**.

**R4-2014155 Reply LS on Rel-16 UE feature lists for NR DAPS**

*Type: LS in For: Information  
 Original outgoing LS: R2-2008149, to RAN1, cc RAN4  
 Source: RAN2*

**Decision:** The document was **noted**.

**R4-2014156 Reply LS on exchange of information related to SRS-RSRP measurement resource configuration for UE-CLI**

*Type: LS in For: Information  
 Original outgoing LS: R2-2008220, to RAN3, cc RAN1, RAN4  
 Source: RAN2*

**Decision:** The document was **noted**.

**R4-2014157 LS to RAN4 on measurement requirement for eMTC UE in RRC\_INACTIVE**

*Type: LS in For: Information  
 Original outgoing LS: R2-2008234, to RAN4, cc -  
 Source: RAN2*

**Decision:** The document was **noted**.

**R4-2014158 LS on UE capability for V2X**

*Type: LS in For: Information  
 Original outgoing LS: R2-2008350, to RAN1, cc RAN4  
 Source: RAN2*

**Decision:** The document was **noted**.

**R4-2014159 LS on simultaneous Rx/Tx for inter-band NR-DC**

*Type: LS in For: Information  
 Original outgoing LS: R2-2008635, to RAN4, cc -  
 Source: RAN2*

**Decision:** The document was **noted**.

**R4-2014160 LS on cell-grouping UE capability for synchronous NR-DC**

*Type: LS in For: Information  
 Original outgoing LS: R2-2008662, to RAN1, RAN4, cc -  
 Source: RAN2*

**Decision:** The document was **noted**.

**R4-2016598 FREQUENCY ARRANGEMENTS FOR IMT IN THE BAND 470**

*Type: LS in For: Information  
 Original outgoing LS: -, to RAN, RAN4, cc -  
 Source: APT Wireless Group*

**Decision:** The document was **noted**.

**R4-2017799 REPLY LIAISON STATEMENT TO 3GPP RAN4**

*Type: LS in For: Information  
 Original outgoing LS: -, to RAN4, cc -  
 Source: ITU-R Working Party (WP) 5D*

**Decision:** The document was **noted**.

**R4-2017800 LS to 3GPP RAN WG4 on Release 15 of the IMT harmonised standard**

*Type: LS in For: Information  
 Original outgoing LS: -, to -, cc -  
 Source: MSG TFES*

**Decision:** The document was **noted**.

**R4-2017801 Reply LS on UE capability on wideband carrier operation for NR-U**

*Type: LS in For: Information  
 Original outgoing LS: R1-2009385, to RAN4, cc RAN2  
 Source: RAN1*

**Decision:** The document was **noted**.

**R4-2017802 Reply LS on number of configurable CSI-RS resources per MO**

*Type: LS in For: Information  
 Original outgoing LS: R1-2009444, to RAN2, RAN4, cc -  
 Source: RAN1*

**Decision:** The document was **noted**.

**R4-2018002 Reply LS on updated Rel-16 LTE parameter lists**

*Type: LS in For: Information  
 Original outgoing LS: R2-2009609, to RAN1, RAN4, cc -  
 Source: RAN2*

**Decision:** The document was **noted**.

**R4-2018003 Reply LS on definition of NR V2X con-current operation**

*Type: LS in For: Information  
 Original outgoing LS: R2-2010927, to RAN4, cc RAN1  
 Source: RAN2*

**Decision:** The document was **noted**.

**R4-2018004 Reply LS on FR1 intra-band UL CA UE capability**

*Type: LS in For: Information  
 Original outgoing LS: R2-2011023, to RAN4, cc -  
 Source: RAN2*

**Decision:** The document was **noted**.

## 4 Rel-15 New radio access technology

### 4.1 System Parameters Maintenance [NR\_newRAT-Core]

**R4-2016603 Email discussion summary for [97e][101] NR\_NewRAT\_SysParameters**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

**Discussion:**

The contribution summarized email discussion thread [97e][101] NR\_NewRAT\_SysParameters. The subject for discussion was System Parameters Maintenance. The email thread was moderated by Aijun Cao (ZTE Wistron Telecom AB) and treated during Main session chaired by Steven Chen (Apple).

**Decision:** The document was **revised to R4-2016945**.

**R4-2016945 Email discussion summary for [97e][101] NR\_NewRAT\_SysParameters**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

(Replaces R4-2016603)

**Discussion:**

The contribution summarized email discussion thread [97e][101] NR\_NewRAT\_SysParameters. The subject for discussion was System Parameters Maintenance. The email thread was moderated by Aijun Cao (ZTE Wistron Telecom AB) and treated during Main session chaired by Steven Chen (Apple).

**Decision:** The document was **noted**.

**R4-2016779 LS to RAN5 on nominal channel spacing calculation for two carriers at band n41 with 40MHz and 80MHz channel bandwidths**

*Type: LS out For: Approval  
 to RAN5  
 Source: RAN4*

**Discussion:**

See email discussion summary for [97e][101] NR\_NewRAT\_SysParameters in R4-2016603.

**Decision:** The document was **approved**.

**R4-2015176 CR to TS 38.307 Release independence support of new channel bandwidth from Rel-15**

*Type: CR For: Agreement  
 38.307 v15.6.0 CR-0039 Cat: F (Rel-15)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

There is no requirement specified for a new channel bandwidth added to an existing operating band introduced in Rel-15 in a manner of release independent from Rel-15. This is the formal CR for the endorsed draft CR R4-2011685 with additional corrections on the captions of the new tables.

**Discussion:**

See email discussion summary for [97e][101] NR\_NewRAT\_SysParameters in R4-2016603.

**Decision:** The document was **agreed**.

**R4-2016524 On channel space for CA**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: Agree on the CR[3][4] for revision of CA channel space.

**Discussion:**

See email discussion summary for [97e][101] NR\_NewRAT\_SysParameters in R4-2016603.

**Decision:** The document was **noted**.

**R4-2016525 CR on channel space for CA**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0578 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In sentence “GBChannel(i) is the minimum guard band for channel bandwidth i according to Table 5.3.3-1 for the said μ value with μ as defined in TS 38.211.”, the “said μ” is not clearly defined.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][101] NR\_NewRAT\_SysParameters in R4-2016603.

**Decision:** The document was **not pursued**.

**R4-2016526 CR for 38.101-1 channel space for CA\_Rel16**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0579 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][101] NR\_NewRAT\_SysParameters in R4-2016603.

**Decision:** The document was **withdrawn**.

**R4-2016527 CR on channel space for CA**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0304 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In sentence “GBChannel(i) is the minimum guard band for channel bandwidth i according to Table 5.3.3-1 for the said μ value with μ as defined in TS 38.211.”, the “said μ” is not clearly defined.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][101] NR\_NewRAT\_SysParameters in R4-2016603.

**Decision:** The document was **not pursued**.

**R4-2016528 CR for 38.101-2 channel space for CA\_Rel16**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0305 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][101] NR\_NewRAT\_SysParameters in R4-2016603.

**Decision:** The document was **withdrawn**.

### 4.2 UE RF requirements maintenance [NR\_newRAT]

#### 4.2.1 [FR1] Maintenance for 38.101-1 [NR\_newRAT-Core]

**R4-2016604 Email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The subject for discussion was UE RF requirements maintenance. The email thread was moderated by Hisashi Onozawa (Nokia Japan) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016946**.

**R4-2016946 Email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2016604)

**Discussion:**

The contribution summarized email discussion thread [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The subject for discussion was UE RF requirements maintenance. The email thread was moderated by Hisashi Onozawa (Nokia Japan) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016784 Reply LS on structure of NR CA reference sensitivity requirements in 38.101-1**

*Type: LS out For: Approval  
 to RAN5  
 Source: RAN4*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **approved**.

**R4-2015031 CR to TS 38.101-1: Correction on the Aggregated Channel Bandwidth**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0530 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

During the discussion on the Tx RF requirements for intra-band contiguous CA in Rel-16, the parameters such as SCSlow, SCShigh, NRB,low, NRB,high and BWGB,Channel(k) in the equation are fixed to avoid the variable BWChannel\_CA values, and more importantly, it can avoid the cases that the BWChannel\_CA is larger than the sum of the channel bandwidth of the CCs.

In currently Rel-15 spec, there are some intra-band contiguous CA Rx requirements are defined associate with BWChannel\_CA .It is important to guarantee the BWChannel\_CA is not larger than the sum of the channel bandwidth of the CCs. Therefore, the methods agreed in Rel-16 spec shall be also applied to Rel-15 spec.

In addition, it was agreed in RAN4 #95e meeting that μ=1 is selected for some cases without common μ to calculate the CA nominal channel spacing.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **not pursued**.

**R4-2015032 CR to TS 38.101-1: Correction on the Aggregated Channel Bandwidth**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0531 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **withdrawn**.

**R4-2016041 CR Removal of Band 10 protection 38101-1 Rel15**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0555 Cat: F (Rel-15)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Band 10 protection removal has been agreed for LTE in R4-2011521. This CR applies this correction to relevant NR bands and NR CA combinations.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

##### 4.2.1.1 Maintenance for Transmitter characteristics [NR\_newRAT-Core]

**R4-2014254 CR to 38.101-1: UL MIMO EVM and emission requirements update**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0494 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

For a UE configured for 2L UL:

Agreement that emissions requirements apply at a UE level are captured in Rel-16, but not in Rel-15

Existing EVM requirement is not consistent with RAN1 design of allowing UE freedom to map logical port to antenna connector. This is also inconsistent with FR2 Tx modulation quality requirements, which are specific per layer

(See R4-2014256 for further details. See also R4-2011762 and CR433)

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked on the coversheet, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **revised to R4-2016780**.

**R4-2016780 CR to 38.101-1: UL MIMO EVM and emission requirements update**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0494 rev 1 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2014254)

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

**R4-2014255 CR to 38.101-1: UL MIMO EVM and emission requirements update**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0495 Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

(Mirror) Insert NS\_203 framework, requirements goes into effect shortly after RAN4#97-e.

**Discussion:**

The CR originally contained two types of items:

- Those that are back-ported from Rel-16 to bring Rel-15 up to date (this CR is like a reverse mirror CR), these changes do not need a Cat A CR (Type#1)

- Those that are new for Rel-15 onwards, these changes need a Cat A CR (Type#2)

After discussion in meeting it was decided to treat Type #2 in a future meeting. What was left in the original CR therefore do not need a mirror CR.

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **withdrawn.**

**R4-2014256 FR1 transmitter requirements for 2-layer UL**

*Type: discussion For: Agreement  
 Source: Qualcomm Incorporated*

**Abstract:**

Intent of EVM test, reference plane for EVM test, clarification that emissions requirements are per-UE.

Proposal 1: The 2L UL MIMO RAN4 EVM requirement shall be evaluated per layer.

Proposal 2: Use the linear zero-forcing 2L MIMO equalizer to define and measure the transmit EVM for multi-layer MIMO transmission

Proposal 3: Change the emissions definition in Rel-15 TS 38.101-1 to reflect Rel-16 TS 38.101-1.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **noted**.

**R4-2014307 Clarification of additional spurious emission requirements on two bands uplink Inter-band CA(R15)**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0496 Cat: F (Rel-15)  
  
 Source: SoftBank Corp.*

**Abstract:**

As current UE co-ex table for two bands uplink Inter-band CA(Table 6.5A.3.2.3-1) only specifies general spurious emission, applicability of additional requirements (using NS\_XX) has not been clearly specified.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **not pursued**.

**R4-2014308 Clarification of additional spurious emission requirements on two bands uplink Inter-band CA(R16)**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0497 Cat: A (Rel-16)  
  
 Source: SoftBank Corp.*

**Abstract:**

As current UE co-ex table for two bands uplink Inter-band CA(Table 6.5A.3.2.3-1) only specifies general spurious emission, applicability of additional requirements (using NS\_XX) has not been clearly specified.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **withdrawn**.

**R4-2014402 CR for TS38.101-1 Rel-15, Correction for definition of P-MPR**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0501 Cat: F (Rel-15)  
  
 Source: CATT*

**Abstract:**

In clause 3.2 and 6.2.4, the definitions of P-MPR are incorrect.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **not pursued**.

**R4-2014403 CR for TS38.101-1 Rel-16, Correction for definition of P-MPR**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0502 Cat: A (Rel-16)  
  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **withdrawn**.

**R4-2014718 CR to TS38.101-1 on DC location correction**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0511 Cat: F (Rel-15)  
  
 Source: Samsung*

**Abstract:**

txDirectCurrentLocation is a parameter of UplinkTxDirectCurrent IE. But txDirectCurrentLocation is mistakenly used as IE

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **revised to R4-2016781**.

**R4-2016781 CR to TS38.101-1 on DC location correction**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0511 rev 1 Cat: F (Rel-15)  
  
 Source: Samsung*

(Replaces R4-2014718)

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

**R4-2014719 CR to TS38.101-1 on DC location correction**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0512 Cat: A (Rel-16)  
  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

**R4-2014898 Coexistence cleanup for 38.101-1 Rel15**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0517 Cat: F (Rel-15)  
  
 Source: Apple Inc.*

**Abstract:**

Rel-15 features several band protection requirements which are not technical possible or contains contradicting protection requirements.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

**R4-2014905 CR for TS 38.101-1: Correction to FR1 time mask for SRS antenna switching**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0519 Cat: F (Rel-15)  
  
 Source: Apple Inc.*

**Abstract:**

FR1 time mask for the case when consecutive SRS switching usage is between antenna switching & other sets as shown in Figure 6.3.3.6-5 in TS 38.101-1 includes both usage sets for between antenna switching and between antenna switching and other sets where the former usage set should have a guard symobl allocated between SRS (Ant. “y”, Ant. switch) and SRS (Ant. “x”, Ant. switch) according to RAN1 specifications in TS 38.214 clause 6.2.1.2.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **not pursued**.

**R4-2014906 CR for TS 38.101-1: Correction to FR1 time mask for SRS antenna switching**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0520 Cat: A (Rel-16)  
  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **withdrawn**.

**R4-2015998 Correction to spurious co-existence requirements for n28 and n83**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0554 Cat: F (Rel-15)  
  
 Source: Keysight Technologies UK Ltd*

**Abstract:**

In R4-1910289, some corrections were done in spurious co-existence requirements to align with 36.101 LTE core requirements. As part of those corrections, protection to frequency band n66 from bands n28 and n83 became misleading as NOTE 2 applicability is not clear. This issue was already corrected for Rel-16 in R4-2009939.

**Discussion:**

The secretary wondered what is the correct Release? It reads Rel-16 on the coversheet but the CR is allocated for Rel-15. See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **not pursued**.

**R4-2016470 CR for TS 38.101-3: correction CR for simultaneous Tx/Rx operation (R15)**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0564 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Simultaneous Rx/Tx capability for TDD-TDD and TDD-FDD inter-band NR CA, SUL or inter-band EN-DC configurations should be a per band combination per band pair capability rather than a per BC capability. Two-band combination is the basis for reporting such a capability.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **not pursued**.

**R4-2016471 CR for TS 38.101-1: correction CR for simultaneous Tx/Rx operation (R16)**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0565 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **withdrawn**.

**R4-2016490 CR for TS 38.101-1: correction of delta Tib for UE supporting multiple band combinations (R15)**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0570 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For UE supporting multiple band combinations, ∆TIB,c could be different for these combinations. Unlike ∆RIB,c , how to use ∆TIB,c in this case is not clearly specified.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

**R4-2016491 CR for TS 38.101-1: correction of delta Tib for UE supporting multiple band combinations (R16)**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0571 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

**R4-2016494 Update of configured transmitted power to remove ambiguity in TL,C (Rel-15)**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0572 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For the requirements of MOP in Table 6.2.1-1, the lower tolerance limit might be relax by 1.5dB according to NOTE 3:

NOTE 3:Refers to the transmission bandwidths confined within FUL\_low and FUL\_low + 4 MHz or FUL\_high – 4 MHz and FUL\_high, the maximum output power requirement is relaxed by reducing the lower tolerance limit by 1.5 dB.

In 6.2.4 the 1.5dB relaxation is considered as ∆TC,c when calculating PCMAX\_L,f,c. But when deciding T(PCMAX,f,c) the tolerance TL,c refers to Table 6.2.1-1 directly, which is ambiguous whether the 1.5dB relaxation needs to be counted twice.

Same problem also exists in CA and UL-MIMO test cases.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **not pursued**.

**R4-2016495 Update of configured transmitted power to remove ambiguity in TL,C (Rel-16)**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0573 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For the requirements of MOP in Table 6.2.1-1, the lower tolerance limit might be relax by 1.5dB according to NOTE 3:

NOTE 3:Refers to the transmission bandwidths confined within FUL\_low and FUL\_low + 4 MHz or FUL\_high – 4 MHz and FUL\_high, the maximum output power requirement is relaxed by reducing the lower tolerance limit by 1.5 dB.

In 6.2.4 the 1.5dB relaxation is considered as ∆TC,c when calculating PCMAX\_L,f,c. But when deciding T(PCMAX,f,c) the tolerance TL,c refers to Table 6.2.1-1 directly, which is ambiguous whether the 1.5dB relaxation needs to be counted twice.

Same problem also exists in CA and UL-MIMO test cases.

**Discussion:**

The secretary wondered what is the correct Release? It reads Rel-15 on the coversheet but the CR is allocated for Rel-16. See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **withdrawn**.

**R4-2016521 CR for TS 38.101-1 Pcmax**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0576 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

‘DL-only carrier’ is not aligned with RAN1/RAN2 spec terminology.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **not pursued**.

**R4-2016522 CR on TS 38.101-1 Pcmax**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0577 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **withdrawn**.

**R4-2016531 on 5MHz AMPR for NS\_38**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Abstract:**

Observation 1: UE could transmit power >15dBm in the real network on Band n74 with NS\_38 signaling, but no AMPR is defined for 5MHz CBW.

Observation 2: UE is allowed to transmit power of >15dBm, but there is no AMPR defined for 5MHz.

Observation 3: when AMPR is larger than 8dB, the Pcmax would be lower than 15dBm.

Proposal 1: Revise AMPR and ASE requirement as in Table 1 and Table 2, the corresponding CR is as in [1].

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **noted**.

**R4-2016534 CR on correction for AMPR NS\_38,NS\_40 and NS\_41**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0580 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

ASE requirement for NS\_38,NS\_40 and NS\_41 requires transmission power of 15dBm, but AMPR for these NS is larger than 8dB for some RB allocations. For NS\_38, there is no 5MHz AMPR definition.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **revised to R4-2016782**.

**R4-2016782 CR on correction for AMPR NS\_38,NS\_40 and NS\_41**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0580 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016534)

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

**R4-2016535 CR for 38.101-1 on corrections for AMPR-Rel-16**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0581 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

Chair: Assuming this CR is the mirror CR for R4-2016782, why does it have a different title?

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

**R4-2016569 EVM Measurement for 2-Layer Uplink MIMO**

*Type: discussion For: Agreement  
 Source: Lenovo, Motorola Mobility*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **noted**.

**R4-2016578 CR to DMRS position in UL RMC for FR1**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0582 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

DM-RS symbol positions for 11 UL OFDM symbols in UL RMC tables are not consistent with RAN1 spec of TS38.211.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **revised to R4-2016783**.

**R4-2016783 CR to DMRS position in UL RMC for FR1**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0582 rev 1 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2016578)

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

**R4-2016993 CR to DMRS position in UL RMC for FR1**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0584 Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

##### 4.2.1.2 Maintenance for Receiver characteristics [NR\_newRAT-Core]

**R4-2015016 CR to TS 38.101-1[R15]: Clarification of non-simultaneous Rx/Tx operation for CA\_n77-n79 and CA\_n78-n79 in TS 38.101-1.**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0526 Cat: F (Rel-15)  
  
 Source: NTT DOCOMO, INC.*

**Abstract:**

It is unclear whether it is synchronous operation or asynchronous operation when proposing new configuration that include CA\_n77-n79 or CA\_n78-n79. Also, it is not good to have to mention this every time we propose a higher order configurations.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **revised to R4-2016789**.

**R4-2016789 CR to TS 38.101-1[R15]: Clarification of non-simultaneous Rx/Tx operation for CA\_n77-n79 and CA\_n78-n79 in TS 38.101-1.**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0526 rev 1 Cat: F (Rel-15)  
  
 Source: NTT DOCOMO, INC.*

(Replaces R4-2015016)

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

**R4-2015017 CR to TS 38.101-1[R16]: Clarification of non-simultaneous Rx/Tx operation for CA\_n77-n79 and CA\_n78-n79 in TS 38.101-1.**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0527 Cat: A (Rel-16)  
  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

**R4-2015029 CR to TS 38.101-1: Correction on applicability of 4Rx requirements for CA**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0528 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

For diversity charateristics, requirements for two Rx antenna ports are the baseline, also it applies when the band is used as a standalone band or as part of a band combination, as stated in the spec.

However, some bands such as band n41/n77/n78/n79 supporting four Rx antenna ports, also for some band combination such as CA n3A-n78A and n8A-n78A, MSD values have already considered the four Rx antenna ports.

Therefore, the additional requirements for four Rx ports, same as two Rx antenna ports, shall be applied for supported band combinations for which the UE can operate using up to four Rx ports while configured with carrier aggregation.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **not pursued**.

**R4-2015030 CR to TS 38.101-1: Correction on applicability of 4Rx requirements for CA**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0529 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **withdrawn**.

**R4-2015558 Discussion and reply draft LS on structure of NR CA reference sensitivity requirements in 38.101-1**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: It’s proposed to inform RAN5 that the requirement structure in both clause 7.3A.4 and 7.3A.6 listing only aggressor and victim will be retained in future.

Proposal 2: It’s proposed to inform RAN5 that band combination specific manner will be used to specify IMD exception requirements in clause 7.3A.5.

Proposal 3: It’s proposed to move the SDL requirements in 7.3A.2.4 to 7.3. The exceptions for SDL band combinations can be specified in clause 7.3A.4, 7.3A.5 and 7.3A.6.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **noted**.

**R4-2015559 CR for 38.101-1 to adjust the structure of NR CA REFSENS**

*Type: CR For: Agreement  
 38.101-1 v15.11.0 CR-0541 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

There are some reasons to move the SDL requirements in 7.3A.2.4 to 7.3.

Firstly, the REFSENS for SDL bands are band combination independent. RAN4 don’t need to list SDL band REFSENS one by one for different inter-band CA combinations.

Secondly, it’s helpful to reduce the coupling between clause 7.3 and clause 7.3A.2.4. It can cause some misalignment between 7.3A.2.4 and 7.3 that the REFSENS other than SDL bands are also listed in clause 7.3A.2.4.

Thirdly, the requirements in clause 7.3A.2.4 are totally same with REFSENS requirements for inter-band CA in clause 7.3A.2.3. For SDL bands, the reference sensitivity requirements can be verified by inter-band CA combinations with SDL band.

IMD exception is the only one that depends on specific DL configuration for all the NR CA requirements. From RF technical perspective, the different configurations of NR CA band combinations have the same IMD exception requirements. Listing all the different configurations not only brings the risks of missing and errors, but also makes spec redundant because of no additional information.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

**R4-2015560 CR for 38.101-1 to adjust the structure of NR CA REFSENS (Rel-16)**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0542 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

#### 4.2.2 [FR2] Maintenance for 38.101-2 [NR\_newRAT-Core]

**R4-2016605 Email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The subject for discussion was UE RF requirements maintenance. The email thread was moderated by James Wang (Apple (UK) Limited) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016947**.

**R4-2016947 Email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2016605)

**Discussion:**

The contribution summarized email discussion thread [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The subject for discussion was UE RF requirements maintenance. The email thread was moderated by James Wang (Apple (UK) Limited) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016994 WF on NR SCC UL power drop behavior in FR2**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **approved**.

**R4-2016053 Frequency separation class alignment**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0294 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Alignment of Frequency Separation classes to TS38.331.

At RAN2#111-e (August 2020) two Rel-16 CRs to TS38.331 (R2-2008463) and TS38.306 (R2-2008462) where agreed.

Those CRs makes the needed uppdates to the specifications according to an RAN4 agreement stated in an LS to RAN2 in (R2-2006174 (R4-2009294)) Titled “LS on Frequency separation class for DL-only spectrum for FR2”

In TS38.331 previously stated:

-----------------------------

FreqSeparationClass ::= ENUMERATED {c1, c2, c3, ...}

Where the values c1, c2, c3 correspond to the values defined in TS38.101-2, Table 5.3A.4-2.

-----------------------------

After the change the I.E now indicates explicit values:

FreqSeparationClass ::= ENUMERATED { mhz800, mhz1200, mhz1400, ...}

And the new I.E for Frequency separation Class DL is added as:

FreqSeparationClassDL-Only-r16 ::= ENUMERATED {mhz200, mhz400, mhz600, mhz800, mhz1000, mhz1200}

----------------------------

In this paper 38.101-2 is aligned with the updated signaling.

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **not pursued**.

##### 4.2.2.1 Regulatory Tx/Rx spurious emission limits handling [NR\_newRAT-Core]

**R4-2014054 EESS protection related requirements for FR2 bands**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0262 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction of EESS protection based on WRC-19.

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **revised to R4-2016785**.

**R4-2016785 EESS protection related requirements for FR2 bands**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0262 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2014054)

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2014055 EESS protection related requirements for FR2 bands**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0263 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Cat A CR of R4-2014054.

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2014257 draft LS to RAN5 on new emissions requirements**

*Type: LS out For: Approval  
 to RAN5  
 Source: Qualcomm Incorporated*

**Abstract:**

Editor’s note captures applicability (emissions changeover) date for a new NS flag. The intent is to convey to RAN5 that the recommended date for introduction of requirement in RAN5 spec

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **noted**.

**R4-2014258 On introduction of new emissions requirements to existing bands**

*Type: discussion For: Agreement  
 Source: Qualcomm Incorporated*

**Abstract:**

We discuss the general problem of keeping 3GPP requirements consistent with regulation changes that become applicable at calendar dates, rather than at the close of a release cycle.

Observation 1: Existing 3GPP processes cause undue reduction in UL performance of legacy UEs when faced with new emissions regulations, despite any exemptions for legacy UE.

Observation 2: There is no RAN2 impact from introducing new NS to existing bands due to available NS slots and existing framework.

Observation 3: To incorporate a new emissions requirement, RAN4 cannot wait to insert NS framework just prior to an emissions requirement applicability date.

Observation 4: A RAN4 solution that allows completion of requirements well in advance of applicability dates is much more practical than one involving long-term calendar-monitoring.

Proposal 1: RAN4 to introduce NS\_203 immediately. Applicability date information is not necessary to be captured.

Proposal 2a: RAN4 to implement new NS per Option 3 described in Table 2.3-1 => introduce new NS into standard immediately with applicability (‘mandatory from’) date as a normative element.

Proposal 2b: RAN4 to implement new NS per Option 4 described in Table 2.3-1 => introduce new NS into standard immediately with applicability (‘mandatory from’) dates in Editor’s Notes.

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **noted**.

**R4-2014259 CR to 38.101-2: Introduction of NS\_203**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0264 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Some WRC19 emissions resolutions become applicable 1/1/2021. For 3GPP to pro-actively incorporate the new requirements, new NS framework is needed in standard.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked on the coversheet, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **not pursued**.

**R4-2014260 CR to 38.101-2: Introduction of NS\_203**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0265 Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

(Mirror) NS\_203 goes into effect shortly after RAN4#97-e.

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **withdrawn**.

**R4-2014885 CR for introduction of EESS protection applied after 2021**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0277 Cat: F (Rel-15)  
  
 Source: NTT DOCOMO INC.*

**Abstract:**

1dBm/200MHz EESS protection for n258 and 7dBm/GHz and -13dBm/MHz for n260 will apply from 1 January 2021 according to WRC-19 decision

Reflect the following agreements in R4-2009141:

1dBm/200MHz protection requirements is specified with NS\_203 for n258

7dBm/1GHz and -13dBm/MHz are specified with NS\_205 for n260.

Explicit signaling for a UE to report newly supported NS value(s) for a legacy band to the network (reuse modifiedMPR bits)

A-MPR values proposed in R4-2006788 apply

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **not pursued**.

**R4-2014886 CR for introduction of EESS protection applied after 2021**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0278 Cat: A (Rel-16)  
  
 Source: NTT DOCOMO INC.*

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **withdrawn**.

**R4-2014925 Further consideration on EESS protection**

*Type: other For: Approval  
 Source: NTT DOCOMO INC.*

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **withdrawn**.

**R4-2014926 Further consideration on EESS protection**

*Type: other For: Approval  
 Source: NTT DOCOMO INC.*

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **noted**.

**R4-2015211 Remaining issues on WRC-19**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution mainly addresses how to handle the other NS(s) other than NS\_203.

Proposal 1: Make NS\_201/CA\_NS\_201 not applicable in the following ways.

- Add a NOTE such that “the NS(s) is not applicable in the present release of specifications” to NS mapping tables.

- Replace the relevant subclauses on the NS(s) with “void”.

Proposal 2: Introduce NS\_203/CA\_NS\_203 with a bit for modifiedMPR for the NS(s) as mandatory

Observation: Since it is challenging for 3GPP to uniquely define “UE brought into use” as a single 3GPP phrase applicable all over the world, regardless of whatever options RAN4 takes, ambiguity still remains.

Proposal 3: Consider a following possible compromised alternative as one of the options

- Capture the new NS(s), but make them not available by making A-MPR TBD

- Capture an informative NOTE outside the relevant table to explain the situation

- Specific examples are captured in Annex

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **noted**.

**R4-2015255 on FR2 spurious emission NS handling**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Abstract:**

Observation 1: More stringent requirement after the change-over date apply to UE/chipset who went on the market before the change-over date is the main problem on introducing the EESS protection into specification.

Observation 2: The requirements applicable after 2024/2027 are part of current requirements so UE need to have the capability with these requirements.

Observation 3: We have no clue weather a UE will be used after change-over date, so the capability should be added before the change over date

Proposal: Choose option 2 above for introducing the all foreseen NS values.

Proposal: Choose option 2 above for introducing the all foreseen NS values.

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **noted**.

**R4-2016532 on FR2 EESS protection emission requirement**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Abstract:**

Observation 1: even UE is mandatory to support newly introduced NS after change over date, UE is not mandatory to behave with newly NS.

Observation 2: From “2 stage emission requirement” and “NS signalling”, even we push it as mandatory to support, the tight NS may only a requirement shown up in verification test but never implemented by UE in real network.

Observation 3: Modified MPR solution actually equals to: directly specify UE is mandatory to support 1dBm/200MHz on n258 from Rel-15.

Proposal 1: Do not introduce modified MPR solution for indicating on NS support.

Proposal 2: For 1dBm/200MHz for n258, UE is mandatory to support it from Rel-15, regardless of the “brought into use” date.

Proposal 3: Leave -5dBm/200MHz requirement for the future work of RAN4.

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **noted**.

##### 4.2.2.2 Maintenance for Transmitter characteristics [NR\_newRAT-Core]

**R4-2014261 CR to 38.101-2: ULCA clarifications**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0266 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

During the work phase for the Rel-16 FR2 intra-band non-contiguous UL CA feature, R4-2011511 identified some conflicts, need for clarifications and editorial reoriganization in TS38.101-2. These changes were adopted for Rel-16 in the feature CR for FR2 NC UL CA. This CR is a ‘reverse mirror’ to back-port those changes to Rel-15.

Also included are some editorial changes

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked on the coversheet, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2014262 CR to 38.101-2: ULCA clarifications**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0267 Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

(Mirror) Resolve spec conflict, introduce clarifications as identified in Rel-16 NC ULCA feature CR

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2014684 Transmission gap for relative power tolerance in FR2**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0273 Cat: F (Rel-15)  
  
 Source: Anritsu corporation*

**Abstract:**

In sub-clause 6.3.4.3, definition of transmission gap for relative power tolerance is not aligned with the associated requirement for FR1 nor E-UTRA requirement.

In 6.3A.4.3, expression of transmission gap is not aligned with 6.3.4.3.

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2014685 Transmission gap for relative power tolerance in FR2**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0274 Cat: A (Rel-16)  
  
 Source: Anritsu corporation*

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2014711 PCC SCC prioritization issue solution**

*Type: discussion For: Approval  
 Source: Qualcomm Incorporated*

**Abstract:**

Proposal: Add a note to the TS 38.101-2 that MPR’s were derived with equal PSD in the analysis

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **noted**.

**R4-2014720 CR to TS38.101-2 on DC location correction**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0275 Cat: F (Rel-15)  
  
 Source: Samsung*

**Abstract:**

txDirectCurrentLocation is a parameter of UplinkTxDirectCurrent IE. But txDirectCurrentLocation is mistakenly used as IE

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **revised to R4-2016786**.

**R4-2016786 CR to TS38.101-2 on DC location correction**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0275 rev 1 Cat: F (Rel-15)  
  
 Source: Samsung*

(Replaces R4-2014720)

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2014721 CR to TS38.101-2 on DC location correction**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0276 Cat: A (Rel-16)  
  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2014907 CR for TS 38.101-2: Clarification for NS\_202 emission requirements**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0279 Cat: F (Rel-15)  
  
 Source: Apple Inc.*

**Abstract:**

NS\_202 contains two emission requirements, one is for additional spurious emission requirement at -10 dBm/100 MHz, the other at 1 dBm/200 MHz is meant for protection of satellite passive services. Since the former requirement is tighter and also covers the frequency range of the latter requirement, without clarification on the purpose of the latter requirement, it would look to be redudant for the latter requirement in NS\_202.

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2014908 CR for TS 38.101-2: Clarification for NS\_202**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0280 Cat: A (Rel-16)  
  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2015334 Discussion on FR2 equal PSD in CA and draft LS**

*Type: discussion For: Approval  
 Source: OPPO*

**Abstract:**

Observation 1: Equal PSD restriction was introduced into spec without much explanation why this is needed for Pcmax and the comments are from UE implementation rather than from testing point of view.

Observation 2: No such equal PSD restriction was introduced into other RAN4 specs like FR1 CA or EN-DC.

Observation 3: Usually MPR are derived based on some precondition (the worst case), however, it applies to all the scenarios and there is no need to mention about the precondition in spec.

Proposal 1: It is proposed to remove the equal PSD restriction from Pcmax section.

Observation 4: Requirements related to max power in CA are also impacted and derive of worst case in testing is this is up to RAN5.

Observation 5: RF tests are verifying UE hardware performance, and what matters is the status that is targeted to be verified, therefore there is no need to always follow the UE behaviour in the NW.

Observation 6: Test mode or test commands can be adopted to derive the equal PSD status from testing point of view.

Proposal 2: It is proposed to inform RAN5 about the updates and backgrounds in RAN4 specs to facilitate test case design.

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **noted**.

**R4-2015335 CR on FR2 equal PSD in UL CA**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0285 Cat: F (Rel-15)  
  
 Source: OPPO*

**Abstract:**

As discussed in R4-2015334, the equal PSD restriction in Pcmax is not needed and it has caused confusions in interpretation of requirements.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **not pursued**.

**R4-2015970 Correction to Pcmax: total radiated power**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0288 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

The total radiated power for CA is undefined. The defintion of the index i of the active serving cells c(i) is missing.

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2015971 Correction to Pcmax: total radiated power**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0289 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

CR to add definition and requirements for total radiated power

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2016056 Correction of transmission gap definition for Relative power tolerance**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0295 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The defined transmission gap between sub-frames for relative power tolerance is not correctly defined. It is set to 20ms, corrrect definition schould be “less than or equal to 20ms”

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **withdrawn**.

**R4-2016057 Correction of transmission gap definition for Relative power tolerance**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0296 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

The defined transmission gap between sub-frames for relative power tolerance is not correctly defined. It is set to 20ms, corrrect definition schould be “less than or equal to 20ms”

**Discussion:**

The secretary wondered what is the correct Release? It reads Rel-16 on the coversheet but the CR is allocated for Rel-15. See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **not pursued**.

**R4-2016459 CR for 38.101-2: IBB and ACS corrections**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0298 Cat: F (Rel-15)  
  
 Source: T-Mobile USA*

**Abstract:**

There is an error in the symbols for channel bandwidths of carrier k fpor IBB and ACS

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2016460 Mirror CR for 38.101-2: IBB and ACS corrections**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0299 Cat: A (Rel-16)  
  
 Source: T-Mobile USA*

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2016579 CR to DMRS position in UL RMC for FR2**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0306 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

DM-RS symbol positions for 11 UL OFDM symbols in UL RMC tables are not consistent with RAN1 spec of TS38.211.

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **revised to R4-2016787**.

**R4-2016787 CR to DMRS position in UL RMC for FR2**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0306 rev 1 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2016579)

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2017823 CR to DMRS position in UL RMC for FR2**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0310 Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2014404 CR for TS38.101-2 Rel-15, Correction for definition of P-MPR**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0268 Cat: F (Rel-15)  
  
 Source: CATT*

**Abstract:**

In clause 6.2.4, the definitions of P-MPR are incorrect.

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

**R4-2014405 CR for TS38.101-2 Rel-16, Correction for definition of P-MPR**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0269 Cat: A (Rel-16)  
  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 in R4-2016604.

**Decision:** The document was **agreed**.

##### 4.2.2.3 Maintenance for Receiver characteristics [NR\_newRAT-Core]

**R4-2016031 Correction to EIS definition**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0292 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Abstract:**

The abbreviation for EIS is explained inconsitently in the specification. In chapter 3.3 and throughout chapter 7 it is defined as “effective isotropic sensitivity”, but in chapter 3.1 it is mentioned as “equivalent isotropic sensitivity”. The definition in chapter 3.1 needs to be aligned with the other usages of the term in the specifiation.

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **revised to R4-2016788**.

**R4-2016788 Correction to EIS definition**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0292 rev 1 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

(Replaces R4-2016031)

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2016032 Correction to EIS definition**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0293 Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **agreed**.

**R4-2016499 CR to 38.101-2: Frequency separation class update**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0300 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

During the Rel-16 FR2 RF enhancement work item, two categories of new frequency separation classes were introduced:

Rel-16 enhancement, FS>1400 MHz

Rel-15 compliant FS = 1000 MHz

Unfortunately, both categories were implemented by RAN2 exclusively as a Rel-16 enhancement due to lack of clarity in LS from RAN4 on this aspect.

FS = 1000 MHz is contained inside the range of FS that is supportable by Rel-15 infra hardware (800 to 1400 MHz). Consequently there would be network benefit to enhancing the Rel-15 list of FS class for UEs by introduction of FS = 1000 MHz

Cat A (mirror) CR not required because this is a case of Rel-15 catching up to Rel-16

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **not pursued**.

**R4-2016545 draft LS to RAN2 on Rel-15 frequency separation class update**

*Type: LS out For: Approval  
 to RAN2  
 Source: Qualcomm Incorporated*

**Abstract:**

Introduce intermediate value of FS class

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **noted**.

**R4-2016590 CR for intra-band NC DL CA Rrefsens**

*Type: CR For: Agreement  
 38.101-2 v15.11.0 CR-0307 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For UE supporting CA configuration, ΔRIB is also applied for Single carrier requirement. There is no clarification in the spec.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **not pursued**.

**R4-2016520 CR on FR2 intra-band NC DL CA refsens**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0303 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 in R4-2016605.

**Decision:** The document was **withdrawn**.

#### 4.2.3 Maintenance for 38.101-3 [NR\_newRAT-Core]

**R4-2016606 Email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The subject for discussion was UE RF requirements maintenance. The email thread was moderated by Meng Zhang (HUAWEI TECHNOLOGIES Co. Ltd.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited)

**Decision:** The document was **revised to R4-2016948**.

**R4-2016948 Email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2016606)

**Discussion:**

The contribution summarized email discussion thread [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The subject for discussion was UE RF requirements maintenance. The email thread was moderated by Meng Zhang (HUAWEI TECHNOLOGIES Co. Ltd.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited)

**Decision:** The document was **noted**.

**R4-2016988 LS to RAN2 on UE simultaneous Rx/Tx capability**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **approved**.

**R4-2014914 CR for TS 38.101-3: Corrections for intra-band contiguous EN-DC configurations**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0380 Cat: F (Rel-15)  
  
 Source: Apple Inc.*

**Abstract:**

Intra-band contiguous EN-DC combinations cannot have non-contiguous UL configurations.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **not pursued**.

**R4-2016238 CR 38101-3 R15 Band 10 protection and DC\_42\_n79 correction**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0411 Cat: F (Rel-15)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Band 10 protection removal has been agreed for LTE in R4-2011521. This CR applies this correction to relevant EN-DC combinations.

DC\_42\_n79 Simultaneous Tx/Rx operation is ambiguous.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **revised to R4-2016790**.

**R4-2016790 CR 38101-3 R15 Band 10 protection and DC\_42\_n79 correction**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0411 rev 1 Cat: F (Rel-15)  
  
 Source: Skyworks Solutions Inc.*

(Replaces R4-2016238)

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

**R4-2016241 CR 38101-3 R16 Band 10 protection and DC\_42\_n79 correction**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0412 Cat: A (Rel-16)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Mirror R16 CR to R15 CR0411 in R4-2016238

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

##### 4.2.3.1 [FR1] Maintenance for Transmitter characteristics within FR1 [NR\_newRAT-Core]

**R4-2014309 Clarification of additional spurious emission requirements on Inter-band EN-DC(R15)**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0360 Cat: F (Rel-15)  
  
 Source: SoftBank Corp.*

**Abstract:**

As current UE co-ex table for Inter-band EN-DC(Table 6.5B.3.3.2-1) only specifies general spurious emission, applicability of additional requirements (using NS\_XX) has not been clearly specified.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **not pursued**.

**R4-2014310 Clarification of additional spurious emission requirements on Inter-band EN-DC(R16)**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0361 Cat: A (Rel-16)  
  
 Source: SoftBank Corp.*

**Abstract:**

As current UE co-ex table for Inter-band EN-DC(Table 6.5B.3.3.2-1) only specifies general spurious emission, applicability of additional requirements (using NS\_XX) has not been clearly specified.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **withdrawn**.

**R4-2014900 Coexistence cleanup for 38.101-3 Rel15**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0378 Cat: F (Rel-15)  
  
 Source: Apple Inc.*

**Abstract:**

Rel-15 features several band protections which are not technical possible due to sometimes TDD bands with overlapping regions are protected or similar issues. The CR focuses on correcting false protections so that a UE will not face technical impossible emission requirements.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **not pursued**.

**R4-2015337 CR on simultaneous Tx-Rx for EN-DC**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0393 Cat: F (Rel-15)  
  
 Source: OPPO*

**Abstract:**

In RAN4#96e, the discussion of simultaneous Tx/Rx in EN-DC band combination DC\_42\_n79 happens and it was recognoized that it is unclear whether a band combination is mandatory or optional to support simultaneous Tx/Rx.

In current spec, for example in Table 5.5B.4.1-1(Inter-band EN-DC configurations within FR1 (two bands)), following two notes are defined for simultaneous Tx/Rx. In which NOTE3 means non-simultaneous Tx/Rx is only supported for the band combination, and NOTE7 means simultaneous Rx/Tx is only supported for the band combination.

NOTE 3: The minimum requirements apply only when there is non-simultaneous Tx/Rx operation between E-UTRA and NR carriers. This restriction applies also for these carriers when applicable EN-DC configuration is part of a higher order EN-DC configuration.

NOTE 7: Applicable for UE supporting inter-band EN-DC with mandatory simultaneous Rx/Tx capability.

However, it is not clear for band combinations which neither have NOTE3 nor NOTE7 for example in Table 5.5B.4.1-1. For these band combinations it should be interpretated as the simultaneous Rx/Tx is optionally supported. This is also aligned with the UE capability below in 38.306.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **not pursued**.

**R4-2015338 CR on simultaneous Tx-Rx for EN-DC (R16 mirror CR)**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0394 Cat: F (Rel-16)  
  
 Source: OPPO*

**Abstract:**

In RAN4#96e, the discussion of simultaneous Tx/Rx in EN-DC band combination DC\_42\_n79 happens and it was recognoized that it is unclear whether a band combination is mandatory or optional to support simultaneous Tx/Rx.

In current spec, for example in Table 5.5B.4.1-1(Inter-band EN-DC configurations within FR1 (two bands)), following two notes are defined for simultaneous Tx/Rx. In which NOTE3 means non-simultaneous Tx/Rx is only supported for the band combination, and NOTE7 means simultaneous Rx/Tx is only supported for the band combination.

NOTE 3: The minimum requirements apply only when there is non-simultaneous Tx/Rx operation between E-UTRA and NR carriers. This restriction applies also for these carriers when applicable EN-DC configuration is part of a higher order EN-DC configuration.

NOTE 7: Applicable for UE supporting inter-band EN-DC with mandatory simultaneous Rx/Tx capability.

However, it is not clear for band combinations which neither have NOTE3 nor NOTE7 for example in Table 5.5B.4.1-1. For these band combinations it should be interpretated as the simultaneous Rx/Tx is optionally supported. This is also aligned with the UE capability below in 38.306.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **withdrawn**.

**R4-2015805 Correction of CR0325 implementation**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0399 Cat: F (Rel-15)  
  
 Source: ETSI MCC*

**Abstract:**

Table 6.5B.3.3.2-1 is missing a correction of -38dB to -36dB in Notes as proposed in approved CR0325.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

**R4-2015992 CR to TS 38.101-3 clarifications on indication of Single Uplink allowed for intra-band EN-DC and NE-DC**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0405 Cat: F (Rel-15)  
  
 Source: CHTTL*

**Abstract:**

For the intra-band EN-DC and NE-DC combinations, as the indication of single UL allowed is due to potential emission issues, there is no need to check whether the IM2 or IM3 falls into own primary downlink channel bandwidth or not when determining dual uplink is mandatory support or not.

The description for the equation of the self IM interference includes the intra-band configuration tables in the current specification, which might cause confusion.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **not pursued**.

**R4-2017821 CR to TS 38.101-3 clarifications on indication of Single Uplink allowed for intra-band EN-DC and NE-DC**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0405 rev 1 Cat: F (Rel-15)  
  
 Source: CHTTL*

(Replaces R4-2015992)

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **withdrawn**.

**R4-2015999 CR to TS 38.101-3 clarifications on indication of Single Uplink allowed for intra-band EN-DC and NE-DC**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0406 Cat: A (Rel-16)  
  
 Source: CHTTL*

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **withdrawn**.

**R4-2016054 Correction of p-Max I.E and corresponding references**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0407 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Some references related to the IE p-maxUE-FR1 points wrongly to TS38.331 instead of TS36.331.

The definition/meaning of the I.E is different between TS36.331 and TS38.331. In TS38.331, the p-maxUE-FR1 is a field used for inter-node signaling (CG-ConfigInfo), so does not really belong to 38.101-3

The corresponding parameter to p-maxUE-FR1 for NR-DC in TS38.331 is p-UE-FR1.

**Discussion:**

The secretary wondered what is the correct Category? It reads F on the coversheet but the CR is allocated for A. See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **not pursued**.

**R4-2016793 Correction of p-Max I.E and corresponding references**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0407 rev 1 Cat: A (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016054)

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **withdrawn**.

**R4-2016055 Correction of p-Max I.E and corresponding references**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0408 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Some references related to the IE p-maxUE-FR1 points wrongly to TS38.331 instead of TS36.331.

The definition/meaning of the I.E is different between TS36.331 and TS38.331. In TS38.331, the p-maxUE-FR1 is a field used for inter-node signaling (CG-ConfigInfo), so does not really belong to 38.101-3

The corresponding parameter to p-maxUE-FR1 for NR-DC in TS38.331 is p-UE-FR1.

There is an incorrect reference to p-maxUE-FR1 in the NE-DC clause, this needs to change to p-UE-FR1.

**Discussion:**

The secretary wondered what is the correct Release? It reads Rel-16 on the coversheet but the CR is allocated for Rel-15. See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **not pursued**.

**R4-2016792 Correction of p-Max I.E and corresponding references**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0408 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2016055)

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **withdrawn**.

**R4-2016469 On simultaneous Rx/Tx UE capability**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: If the simultaneous capability of the fallback mode is different from that of the higher order combination, the network shall also refer to the fallback mode capability to decide the UL/DL scheduling for the band combination. Some clarification may be needed in RAN2 specification. Draft LS should be sent to RAN2 for the clarification.

Proposal 2: For FDD-TDD CA/EN-DC band combinations, remove the indication of mandatory simultaneous Rx/Tx operation condition in the spec, instead, only indicate non-simultaneous Rx/Tx for the band combination if identified, and by default UE shall report simultaneous Rx/Tx capability for two-band FDD-TDD band combinations.

Proposal 3: The restriction note similar to non-simultaneous Tx/Rx operation should also be considered for fall back mode to support mandatory simultaneous Tx/Rx operation.

Proposal 4: Revise the Notes in the spec to make the capability consistent for all of the fall back and higher order combinations for TDD-TDD and TDD-FDD CA/EN-DC combinations.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **noted**.

**R4-2014917 LS response on simultaneous Rx/Tx for inter-band NR-DC**

*Type: LS out For: Approval  
 to RAN2  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **noted**.

**R4-2016001 Draft reply LS on simultaneous Rx/Tx for inter-band NR-DC**

*Type: LS out For: Approval  
 to RAN2  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **noted**.

**R4-2016472 CR for TS 38.101-3: correction CR for simultaneous Tx/Rx operation (R15)**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0415 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Simultaneous Rx/Tx capability for TDD-TDD and TDD-FDD inter-band NR CA, SUL or inter-band EN-DC configurations should be a per band combination per band pair capability rather than a per BC capability. Two-band combination is the basis for reporting such a capability.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **not pursued**.

**R4-2016473 CR for TS 38.101-3: correction CR for simultaneous Tx/Rx operation (R16)**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0416 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **withdrawn**.

**R4-2016482 CR for TS 38.101-3: correction of power class for EN-DC**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0418 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

As clarified in the specifcation if UE indicates IE maxNumberSRS-Ports-PerResource = n2 in NR standalone operation mode, the said UE shall meet the NR requirements for either power class 2 or power class 3 in EN-DC within FR1 if UE indicates IE maxNumberSRS-Ports-PerResource = n1 for EN-DC on this NR band. However, there is no UE capabiliity to indicate the power class if it is different from that of SA mode. Since the requirements should be implementation agnostic, the lower bound of PCMAX\_L,f,c,,NR can only take that for PC3.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **not pursued**.

**R4-2016485 CR for 38.101-3 Correction on EN-DC synchronous carriers (R15)**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0419 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The statement (note 10 and note 11) specifies some conditions for UE to meet corresponding EN-DC requirements. However, such conditions can only be met under co-located deployment scenario.

According to agreed WF in R4-1711964, add an additional Note to make it clear that band combination with Note 10 and Note 11 can only work under co-located scenario in this release of the specification.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **revised to R4-2016794**.

**R4-2016794 CR for 38.101-3 Correction on EN-DC synchronous carriers (R15)**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0419 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016485)

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

**R4-2016486 CR for 38.101-3 Correction on EN-DC synchronous carriers (R16)**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0420 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

**R4-2016492 CR for TS 38.101-3: correction of delta Tib for UE supporting multiple band combinations (R15)**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0421 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For UE supporting multiple band combinations, ∆TIB,c could be different for these combinations. Unlike ∆RIB,c , how to use ∆TIB,c in this case is not clearly specified.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **not pursued**.

**R4-2016493 CR for TS 38.101-3: correction of delta Tib for UE supporting multiple band combinations (R16)**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0422 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **withdrawn**.

**R4-2016496 CR for TS 38.101-3: correction of spurious emission band UE co-existence (R15)**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0423 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For Rel-15 EN-DC combos listed in summary of change, the requirements for spurious emission band UE co-existence are incorrect.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **revised to R4-2016791**.

**R4-2016791 CR for TS 38.101-3: correction of spurious emission band UE co-existence (R15)**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0423 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016496)

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

**R4-2016497 CR for TS 38.101-3: correction of spurious emission band UE co-existence (R16)**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0424 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For Rel-16 DC\_13\_n66, The requirements for spurious emission UE co-existence was incorrect.

Corrections to Rel-15 combos need to be mapped in Rel-16 specification.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **revised to R4-2017816**.

**R4-2017816 CR for TS 38.101-3: correction of spurious emission band UE co-existence (R16)**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0424 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016497)

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

**R4-2016498 Adding delta TIB requirement for DC\_2-7-7-13\_n66**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0425 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The delta TIB requirement for DC\_2-7-7-13\_n66 was missing in 38.101-3.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **revised to R4-2016844**.

**R4-2016844 Adding delta TIB requirement for DC\_2-7-7-13\_n66**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0425 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016498)

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

**R4-2016595 on UE capability for intra-band ENDC and LS to RAN2**

*Type: LS out For: Approval  
 to RAN2  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **withdrawn**.

##### 4.2.3.2 [FR1+FR2] Maintenance for Transmitter characteristics involving both FR1 and FR2 [NR\_newRAT-Core]

**R4-2015034 CR to TS 38.101-3: Some corrections on the ENDC**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0384 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

First, the requirements clauses with suffix D in TS38.101-2 are defined for UL-MIMO, which means it is no need to be considered for NR CA operation.

Second, for spectrum emission mask requirements for intra-band non-contiguous EN-DC should be defined generally, which is for sub-block, rather than CC.

Last, for intra-band non-contiguous EN-DC, no need to consider TS38.101-2 for ACLR requirements.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **revised to R4-2016991**.

**R4-2016991 CR to TS 38.101-3: Some corrections on the ENDC**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0384 rev 1 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

(Replaces R4-2015034)

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

**R4-2015035 CR to TS 38.101-3: Some corrections on the ENDC**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0385 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

##### 4.2.3.3 [FR1] Maintenance for Receiver characteristics within FR1 [NR\_newRAT-Core]

**R4-2014165 CR CatF Cross Band Noise DC\_1\_n40\_highBW**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0356 Cat: F (Rel-15)  
  
 Source: Qualcomm*

**Abstract:**

Missing cross band noise MSD for various interband ENDC band combinations with large NR UL BW

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **not pursued**.

**R4-2014166 CR CatA Cross Band Noise DC\_1\_n40\_hignBW**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0357 Cat: A (Rel-16)  
  
 Source: Qualcomm*

**Abstract:**

Missing cross band noise MSD for various interband ENDC band combinations with large NR UL BW

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **withdrawn**.

**R4-2014682 UL output power for spurious response and general Rx**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0369 Cat: F (Rel-15)  
  
 Source: Anritsu corporation, Apple Inc.*

**Abstract:**

Closely associated to the previously agreed CR to OoBB requirements (R4-2011936/2010047), same definitions of UL output power need to be applied also to the following spurious response requirements:

7.7B.3 Inter-band EN-DC within FR1

7.7B.3a Inter-band NE-DC within FR1

Related to above, there is an inconsistency that the current definitions of 7.7B.3a spurious response for inter-band NE-DC within FR1 are not aligned with 7.6B.3.3a (OoBB) Inter-band NE-DC within FR1.

Similar output power setting also needs to be updated for intra-band non-contiguous EN-DC Rx requirements in clause 7.1.

Incorrect clause referencing numbers for inter-band EN-DC/NE-DC combinations.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

**R4-2014683 UL output power for spurious response and general Rx**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0370 Cat: A (Rel-16)  
  
 Source: Anritsu corporation, Apple Inc.*

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

**R4-2015796 CR to correct MSD of DC\_1A-41A\_n77A**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0397 Cat: F (Rel-15)  
  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

**R4-2015797 CR to correct MSD of DC\_1A-41A\_n77A**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0398 Cat: F (Rel-16)  
  
 Source: KDDI Corporation*

**Abstract:**

MSD test points are not correct for the following combinations

DC\_1A-41A\_n77A

DC\_1A-41A\_n78A

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2016085 CR to 38.101-3 DC\_1A-20A\_n28A Missing MSD**

*Type: draftCR For: Endorsement  
 38.101-3 v15.11.0  
 Source: VODAFONE Group Plc*

**Abstract:**

MSD test points for intermodulation interference due to dual uplink operation for PC3 in DC\_1A-20A\_n28A are missing.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **withdrawn**.

**R4-2016087 CR to 38.101-3 DC\_1A-20A\_n28A Missing MSD**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: VODAFONE Group Plc*

**Abstract:**

MSD test points for intermodulation interference due to dual uplink operation for PC3 in DC\_1A-20A\_n28A are missing.

**Discussion:**

See email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF in R4-2016612.

**Decision:** The document was **withdrawn**.

**R4-2016225 Correction of applicability of 2Rx requirements**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0409 Cat: F (Rel-15)  
  
 Source: vivo*

**Abstract:**

In RAN4#96-e meeting, it’s agreed that UE supporting 4Rx can skip 2Rx requirement testing for Rx cases except for single carrier REFSENS. The corresponding CR R4-2011752 was agreed for SA Rx cases, but NSA Rx cases have not been updated yet.

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **revised to R4-2016990**.

**R4-2016990 Correction of applicability of 2Rx requirements**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0409 rev 1 Cat: F (Rel-15)  
  
 Source: vivo*

(Replaces R4-2016225)

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

**R4-2016226 CR to TS38.101-3[R16] Applicability of 2Rx requirements**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0410 Cat: A (Rel-16)  
  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **revised to R4-2017826**.

**R4-2017826 CR to TS38.101-3[R16] Applicability of 2Rx requirements**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0410 rev 1 Cat: A (Rel-16)  
  
 Source: vivo*

(Replaces R4-2016226)

**Discussion:**

See email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 in R4-2016606.

**Decision:** The document was **agreed**.

##### 4.2.3.4 [FR1+FR2] Maintenance for Receiver characteristics involving both FR1 and FR2 [NR\_newRAT-Core]

### 4.3 UE EMC [NR\_newRAT-Core]

#### 4.3.1 General [NR\_newRAT-Core]

#### 4.3.2 Emission requirements [NR\_newRAT-Core]

#### 4.3.3 Immunity requirements [NR\_newRAT-Core]

### 4.4 BS RF [NR\_newRAT-Core]

#### 4.4.1 General [NR\_newRAT-Core]

**R4-2017400 Email discussion summary for [97e][302] NR\_BSRF\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][302] NR\_BSRF\_Maintenance. The email thread was moderated by Johan Sköld (Ericsson) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017602**.

**R4-2017602 Email discussion summary for [97e][302] NR\_BSRF\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2017400)

**Discussion:**

The contribution summarized email discussion thread [97e][302] NR\_BSRF\_Maintenance. The email thread was moderated by Johan Sköld (Ericsson) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2014313 Support of Japan regulation for 2.5 GHz(BWA) in NR BS**

*Type: other For: Information  
 Source: SoftBank Corp., KDDI Corporation, NEC Corporation*

**Abstract:**

Explanation of BS-RF modifications needed for n41 for Japan

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **noted**.

#### 4.4.2 Transmitter characteristics maintenance [NR\_newRAT-Core]

**R4-2016345 CR to 38.104 on Category B OTA spurious emissions for Band n257**

*Type: CR For: Agreement  
 38.104 v15.11.0 CR-0260 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

An LS from ETSI TFES updates RAN4 on the process of completing Rel-15 of the European Harmonised Standard EN 301 908. The LS clarifies that NR BS should support also band n257 in Europe.

**Discussion:**

Session chair Note: The CRs in R4-2016345, R4-2016346, R4-2016347 and R4-2016348 are based on EU regulation update as informed in the LS in R4-2017800 “to facilitate roaming of Band n257 UEs in Europe” when operating within 26.5-27.5GHz.

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **agreed**.

**R4-2016346 CR to 38.104 on Category B OTA spurious emissions for and n257**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0261 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The LS from ETSI TFES makes clear that NR BS should support also band n257 in Europe. The CR adds Band n257 to Category B limits for OTA spurious emissions.

**Discussion:**

Session chair Note: The CRs in R4-2016345, R4-2016346, R4-2016347 and R4-2016348 are based on EU regulation update as informed in the LS in R4-2017800 “to facilitate roaming of Band n257 UEs in Europe” when operating within 26.5-27.5GHz.

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **agreed**.

**R4-2016347 CR to 38.141-2 on Category B OTA spurious emissions for Band n257**

*Type: CR For: Agreement  
 38.141-2 v15.7.0 CR-0254 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

An LS from ETSI TFES updates RAN4 on the process of completing Rel-15 of the European Harmonised Standard EN 301 908. The LS clarifies that NR BS should support also band n257 in Europe.

**Discussion:**

Session chair Note: The CRs in R4-2016345, R4-2016346, R4-2016347 and R4-2016348 are based on EU regulation update as informed in the LS in R4-2017800 “to facilitate roaming of Band n257 UEs in Europe” when operating within 26.5-27.5GHz.

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **agreed**.

**R4-2016348 CR to 38.141-2 on Category B OTA spurious emissions for Band n257**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0255 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The LS from ETSI TFES makes clear that NR BS should support also band n257 in Europe. The CR adds Band n257 to Category B limits for OTA spurious emissions.

**Discussion:**

Session chair Note: The CRs in R4-2016345, R4-2016346, R4-2016347 and R4-2016348 are based on EU regulation update as informed in the LS in R4-2017800 “to facilitate roaming of Band n257 UEs in Europe” when operating within 26.5-27.5GHz.

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **agreed**.

#### 4.4.3 Receiver characteristics maintenance [NR\_newRAT-Core]

### 4.5 BS conformance testing [NR\_newRAT-Perf]

#### 4.5.1 General [NR\_newRAT-Perf]

**R4-2017401 Email discussion summary for [97e][303] NR\_Conformance\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][303] NR\_Conformance\_Maintenance. The email thread was moderated by Richard Kybett (Huawei) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017603**.

**R4-2017603 Email discussion summary for [97e][303] NR\_Conformance\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2017401)

**Discussion:**

The contribution summarized email discussion thread [97e][303] NR\_Conformance\_Maintenance. The email thread was moderated by Richard Kybett (Huawei) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017697**.

**R4-2017697 Email discussion summary for [97e][303] NR\_Conformance\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2017603)

**Decision:** The document was **noted**.

**R4-2017586 WF on AAS co-location for adjacent bands**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

#### 4.5.2 BS specifications clean-ups (including conformance testing and core) [NR\_newRAT-Perf/Core]

##### 4.5.2.1 eAAS specifications [NR\_newRAT-Perf/Core]

**R4-2015949 CR to TS 37.145-1: correction of manufacturer**

*Type: CR For: Agreement  
 37.145-1 v13.10.0 CR-0221 Cat: F (Rel-13)  
  
 Source: Huawei*

**Abstract:**

It was observed that there are still undefined terms "DUID" and “AUTC” mistakenly used instead of proper manufacturer's declaration and test signal confugration numbers in the test signal configuration sections.

Furthermore, related ATC2/ANTC2 as well as ATC3/ANTC3 text was aligned for consistency purposes.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **revised to R4-2017589**.

**R4-2017589 CR to TS 37.145-1: correction of manufacturer**

*Type: CR For: Agreement  
 37.145-1 v13.10.0 CR-0221 rev 1 Cat: F (Rel-13)  
  
 Source: Huawei*

(Replaces R4-2015949)

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2015950 CR to TS 37.145-1: correction of manufacturer**

*Type: CR For: Agreement  
 37.145-1 v14.8.0 CR-0222 Cat: A (Rel-14)  
  
 Source: Huawei*

**Abstract:**

Undefined terms "DUID" and “AUTC” mistakenly used instead of proper manufacturer's declaration and test signal confugration numbers in the test signal configuration sections. Furthermore, related ATC2/ANTC2 as well as ATC3/ANTC3 text was aligned for consi

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2015951 CR to TS 37.145-1: correction of manufacturer**

*Type: CR For: Agreement  
 37.145-1 v15.7.0 CR-0223 Cat: A (Rel-15)  
  
 Source: Huawei*

**Abstract:**

Undefined terms "DUID" and “AUTC” mistakenly used instead of proper manufacturer's declaration and test signal confugration numbers in the test signal configuration sections. Furthermore, related ATC2/ANTC2 as well as ATC3/ANTC3 text was aligned for consi

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2015952 CR to TS 37.145-1: correction of manufacturer**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0224 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Undefined terms "DUID" and “AUTC” mistakenly used instead of proper manufacturer's declaration and test signal confugration numbers in the test signal configuration sections. Furthermore, related ATC2/ANTC2 as well as ATC3/ANTC3 text was aligned for consi

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2015953 CR to TS 37.145-2: correction of manufacturer**

*Type: CR For: Agreement  
 37.145-2 v13.12.0 CR-0246 Cat: F (Rel-13)  
  
 Source: Huawei*

**Abstract:**

It was observed that there are still undefined terms "DUID" and “AUTC” mistakenly used instead of proper manufacturer's declaration and test signal confugration numbers in the test signal configuration sections.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **revised to R4-2017649**.

**R4-2017649 CR to TS 37.145-2: correction of manufacturer**

*Type: CR For: Agreement  
 37.145-2 v13.12.0 CR-0246 rev 1 Cat: F (Rel-13)  
  
 Source: Huawei*

(Replaces R4-2015953)

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2015954 CR to TS 37.145-2: correction of manufacturer**

*Type: CR For: Agreement  
 37.145-2 v14.10.0 CR-0247 Cat: A (Rel-14)  
  
 Source: Huawei*

**Abstract:**

Undefined terms "DUID" and “AUTC” mistakenly used instead of proper manufacturer's declaration and test signal confugration numbers in the test signal configuration sections.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2015955 CR to TS 37.145-2: correction of manufacturer**

*Type: CR For: Agreement  
 37.145-2 v15.8.0 CR-0248 Cat: A (Rel-15)  
  
 Source: Huawei*

**Abstract:**

Undefined terms "DUID" and “AUTC” mistakenly used instead of proper manufacturer's declaration and test signal confugration numbers in the test signal configuration sections.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2015956 CR to TS 37.145-2: correction of manufacturer**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0249 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Undefined terms "DUID" and “AUTC” mistakenly used instead of proper manufacturer's declaration and test signal confugration numbers in the test signal configuration sections.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016068 CR to TS 37.145-2 - Update CLTA definition, Rel-15**

*Type: CR For: Agreement  
 37.145-2 v15.8.0 CR-0251 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

The current CLTA definition can lead to unfeasibly large low band CLTA when testing high band systems. The definition has been added to maintain test integrety with smaller antennas.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **not pursued**.

**R4-2016069 CR to TS 37.145-2 - Update CLTA definition, Rel-16**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0252 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Implement changes to CLTA height

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **withdrawn**.

**R4-2016073 CR to TS 37.145-1: Corrections to conformance requirements, Rel-15**

*Type: CR For: Agreement  
 37.145-1 v15.7.0 CR-0226 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

During TFES drafting of the harmonized standard for AAS (EN 301 908 part 23) which is based on the AAS conformance specification a number or errors in 37.145-1 were identified. These need to be corrected so part 23 and 37.145-1 are aligned.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **revised to R4-2017590**.

**R4-2017590 CR to TS 37.145-1: Corrections to conformance requirements, Rel-15**

*Type: CR For: Agreement  
 37.145-1 v15.7.0 CR-0226 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2016073)

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016074 CR to TS 37.145-1: Corrections to conformance requirements, Rel-16**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0227 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Corrections to conformance specification based on errors identified while drafting the European harmonized standard

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016075 CR to TS 37.145-2: Corrections to conformance requirements including UEM additional requirements, Rel-15**

*Type: CR For: Agreement  
 37.145-2 v15.8.0 CR-0253 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

During TFES drafting of the harmonized standard for AAS (EN 301 908 part 23) which is based on the AAS conformance specification a number or errors in 37.145-2 were identified. These need to be corrected so part 23 and 37.145-2 are aligned.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **revised to R4-2017662**.

**R4-2017662 CR to TS 37.145-2: Corrections to conformance requirements including UEM additional requirements, Rel-15**

*Type: CR For: Agreement  
 37.145-2 v15.8.0 CR-0253 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2016075)

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016076 CR to TS 37.145-2: Corrections to conformance requirements including UEM additional requirements, Rel-16**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0254 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Corrections to conformance specification based on errors identified while drafting the European harmonized standard

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016077 CR to TS 37.105: Corrections to core requirements including UEM additional requirements, Rel-15**

*Type: CR For: Agreement  
 37.105 v15.10.0 CR-0205 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

During drafting of the Eurpopean harmonized standard for AAS (EN 301 908 part 23) which is based on the AAS conformance specification a number or errors in 37.145-2 were identified. A number of these relate back to the core specification TS 37.105.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **revised to R4-2017591**.

**R4-2017591 CR to TS 37.105: Corrections to core requirements including UEM additional requirements, Rel-15**

*Type: CR For: Agreement  
 37.105 v15.10.0 CR-0205 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2016077)

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016078 CR to TS 37.105: Corrections to core requirements including UEM additional requirements, Rel-16**

*Type: CR For: Agreement  
 37.105 v16.5.0 CR-0206 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Corrections to core specification based on errors identified while drafting the European harmonized standard

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016079 Discussion on AAS UEM additional requirements**

*Type: discussion For: Discussion  
 Source: Huawei*

**Abstract:**

There is an error between the MSR and single RAT E-UTRA UEM additional requirements. The referenced core requirements are identical but the AAS implementation is different. This is discussed and correcting proposal made.

Proposal 1: Update the E-UTRA core requirement so the referenced requirements are basic limits like the MSR reference.

Proposal 2: The missing UEM addition requirements (MSR and SR E-UTRA) in 37.145-2 are copied from the MSR requirements in 37.105.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **noted**.

**R4-2016080 CR to TS 37.145-2: Corrections to single RAT E-UTRA additional requirements for band 89, Rel-16**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0255 Cat: F (Rel-16)  
  
 Source: Huawei*

**Abstract:**

The SUL band, band 89 has been given the wrong value for coexistence requirements.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016127 CR to 37.145-2: Correction on NR REFSENS**

*Type: CR For: Agreement  
 37.145-2 v15.8.0 CR-0256 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

NR REFSENS is not aligned with TS 38.104, this should be corrected

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016128 CR to 37.145-2: Correction on NR REFSENS**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0257 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016202 CR to 37.145-1: Correction to applicability of additional BC3 requirement (Rel-15)**

*Type: CR For: Agreement  
 37.145-1 v15.7.0 CR-0228 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

On top of generic Tx IM and blocking requirement, there is additional requirement for BC3 base stations which uses 1.28Mcps UTRA TDD signal. Since this signal is not used anymore in any deployment, it is not clear why such requirement would need to be applicable. This CR is proposing to remove this requirement for CSA3A, CRs to remove this requirement for CS16/17 base stations were agreed at RAN4#96-e.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016203 CR to 37.145-1: Correction to applicability of additional BC3 requirement (Rel-16)**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0229 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016204 CR to 37.145-2: Correction to applicability of additional BC3 requirement (Rel-15)**

*Type: CR For: Agreement  
 37.145-2 v15.8.0 CR-0258 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

On top of generic Tx IM and blocking requirement, there is additional requirement for BC3 base stations which uses 1.28Mcps UTRA TDD signal. Since this signal is not used anymore in any deployment, it is not clear why such requirement would need to be applicable. This CR is proposing to remove this requirement for RCSA3A, CRs to remove this requirement for CS16/17 base stations were agreed at RAN4#96-e.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016205 CR to 37.145-2: Correction to applicability of additional BC3 requirement (Rel-16)**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0259 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016282 CR to TS 37.145-2: Out-of-band co-location test antenna definition**

*Type: CR For: Agreement  
 37.145-2 v15.8.0 CR-0260 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

There exist cases where testing becomes impractical with the current CLTA definition.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **not pursued**.

**R4-2017588 CR to TS 37.145-2: Out-of-band co-location test antenna definition**

*Type: CR For: Agreement  
 37.145-2 v15.8.0 CR-0260 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **withdrawn**.

**R4-2016283 CR to TS 37.145-2: Out-of-band co-location test antenna definition**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0261 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The vertical radiating dimension definition is added to the out-of-band CLTA.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **withdrawn**.

**R4-2016502 TS 37.145-2: Corrections OTA SEM, OTA Rx intermod and OTA ACS**

*Type: CR For: Agreement  
 37.145-2 v15.8.0 CR-0265 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

There are a number of wrong references and editorial mistakes in the specifications

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016503 TS 37.145-2: Corrections OTA SEM, OTA Rx intermod and OTA ACS**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0266 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Diverse corrections in OTA SEM, OTA Rx intermod and OTA ACS

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

##### 4.5.2.2 MSR specifications [NR\_newRAT-Perf/Core]

**R4-2015957 CR to TS 37.104: addition of missing note for BC1/BC3 OBUE applicability table for WA BS, Rel-16**

*Type: CR For: Agreement  
 37.104 v16.7.0 CR-0912 Cat: F (Rel-16)  
  
 Source: Huawei*

**Abstract:**

It was observed, that the Rel-16 version of the TS 37.104 specification is missing the note for BC1/BC3 OBUE applicability table for WA BS, which should be same as captured in Rel-15 version of the TS 37.141 test specification. The referred note was introduced by the MSR\_GSM\_UTRA\_LTE\_NR-Core WI.

The referred note was still present in version 16.2.0 of TS 37.104 (based on CR in R4-1905014), but not in version 16.3.0 and onwards (there was CR in R4-1908049 which was Voiding Note1, but Note2 shall still be kept in the spec, while it is missing).

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **agreed**.

**R4-2016184 CR to 37.104: Correction to ACLR limit in non-contiguous spectrum (Rel-15)**

*Type: CR For: Agreement  
 37.104 v15.11.0 CR-0913 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

NR Base Station ACLR limit in non-contiguous spectrum is tested with NTC21. Since this test configuration has one NR carrier in the first sub-block and E-UTRA carrier in the second sub-block, NOTE 3 in Table 6.6.4.6-2a may be misleading.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016185 CR to 37.104: Correction to ACLR limit in non-contiguous spectrum (Rel-16)**

*Type: CR For: Agreement  
 37.104 v16.7.0 CR-0914 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016186 CR to 37.141: Correction to ACLR limit in non-contiguous spectrum (Rel-15)**

*Type: CR For: Agreement  
 37.141 v15.12.0 CR-0953 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

NR Base Station ACLR limit in non-contiguous spectrum is tested with NTC21. Since this test configuration has one NR carrier in the first sub-block and E-UTRA carrier in the second sub-block, NOTE 3 in Table 6.6.4.5.6-2a may be misleading.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016187 CR to 37.141: Correction to ACLR limit in non-contiguous spectrum (Rel-16)**

*Type: CR For: Agreement  
 37.141 v16.7.0 CR-0954 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016349 CR to 37.104 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 37.104 v15.11.0 CR-0916 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

An LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink), providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulation for operation in the bands 1920-1980 MHz and 2110-2170 MHz. This view has been confirmed through an LS exchange with ECC PT1. The limit was removed from the ETSI Harmonised Standard EN 301 908.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016350 CR to 37.104 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 37.104 v16.7.0 CR-0917 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink) , providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulati

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016351 CR to 37.141 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 37.141 v15.12.0 CR-0955 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

An LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink), providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulation for operation in the bands 1920-1980 MHz and 2110-2170 MHz. This view has been confirmed through an LS exchange with ECC PT1. The limit was removed from the ETSI Harmonised Standard EN 301 908.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016352 CR to 37.141 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 37.141 v16.7.0 CR-0956 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink) , providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulati

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016353 CR to 37.105 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 37.105 v15.10.0 CR-0208 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

An LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink), providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulation for operation in the bands 1920-1980 MHz and 2110-2170 MHz. This view has been confirmed through an LS exchange with ECC PT1. The limit was removed from the ETSI Harmonised Standard EN 301 908.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **revised to R4-2017430**.

**R4-2017430 CR to 37.105 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 37.105 v15.10.0 CR-0208 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2016353)

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016354 CR to 37.105 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 37.105 v16.5.0 CR-0209 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink) , providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulati

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016355 CR to 37.145-1 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 37.145-1 v15.7.0 CR-0230 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

An LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink), providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulation for operation in the bands 1920-1980 MHz and 2110-2170 MHz. This view has been confirmed through an LS exchange with ECC PT1. The limit was removed from the ETSI Harmonised Standard EN 301 908.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016356 CR to 37.145-1 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0231 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink) , providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulati

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016357 CR to 37.145-2 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 37.145-2 v15.8.0 CR-0262 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

An LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink), providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulation for operation in the bands 1920-1980 MHz and 2110-2170 MHz. This view has been confirmed through an LS exchange with ECC PT1. The limit was removed from the ETSI Harmonised Standard EN 301 908.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **revised to R4-2017431**.

**R4-2017431 CR to 37.145-2 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 37.145-2 v15.8.0 CR-0262 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2016357)

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016358 CR to 37.145-2 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0263 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink) , providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulati

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016359 CR to 36.104 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 36.104 v15.9.0 CR-4918 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

An LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink), providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulation for operation in the bands 1920-1980 MHz and 2110-2170 MHz. This view has been confirmed through an LS exchange with ECC PT1. The limit was removed from the ETSI Harmonised Standard EN 301 908.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016360 CR to 36.104 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 36.104 v16.7.0 CR-4919 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink) , providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulati

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016361 CR to 36.141 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 36.141 v15.10.0 CR-1286 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

An LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink), providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulation for operation in the bands 1920-1980 MHz and 2110-2170 MHz. This view has been confirmed through an LS exchange with ECC PT1. The limit was removed from the ETSI Harmonised Standard EN 301 908.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016362 CR to 36.141 on Removal of additional limit for Band 1**

*Type: CR For: Agreement  
 36.141 v16.7.0 CR-1287 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The LS from ETSI TFES explains that the additional limit for operation in Band 1 (2110 – 2170 MHz downlink) , providing a “slope” in the region 5-10 MHz outside the operating band, can be removed. The additional limit is not part of the ECC or EC regulati

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016363 CR to 37.104 on MSR Blocking correction**

*Type: CR For: Agreement  
 37.104 v15.11.0 CR-0918 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

The table reference for the general blocking requirement frequency range is incorrect and needs to be corrected.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016364 CR to 37.104 on MSR Blocking correction**

*Type: CR For: Agreement  
 37.104 v16.7.0 CR-0919 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The table reference for the general blocking requirement frequency range is incorrect and needs to be corrected.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016365 CR to 37.141 on MSR Blocking correction**

*Type: CR For: Agreement  
 37.141 v15.12.0 CR-0957 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

The table reference for the general blocking requirement frequency range is incorrect and needs to be corrected.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016366 CR to 37.141 on MSR Blocking correction**

*Type: CR For: Agreement  
 37.141 v16.7.0 CR-0958 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The table reference for the general blocking requirement frequency range is incorrect and needs to be corrected. The cross-reference for OOB blocking also needs to be corrected.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016367 CR to 37.105 on NR+UTRA support for AAS**

*Type: CR For: Agreement  
 37.105 v15.10.0 CR-0210 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

When AAS BS specs were developed fully in Rel-15, there was support included for LTE and UTRA and multi-RAT operation with LTE+UTRA. GSM/EDGE was implicitly excluded. NR support was later introduced in 2018-12 (CR in R4-1808429), but only in combination with LTE. It is not explicitly stated which RATs or RAT combinations that are not covered.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **not pursued**.

**R4-2016368 CR to 37.105 on NR+UTRA support for AAS**

*Type: CR For: Agreement  
 37.105 v16.5.0 CR-0211 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Presently, it is not explicitly explained in TS 37.105 what RATs and RAT combinations that are not supported by AAS BS. This is clarified by the CR.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **withdrawn**.

##### 4.5.2.3 NR conformance testing specifications [NR\_newRAT-Perf]

**R4-2015378 On PN23 sequence generation for data content for NR test models**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Observation 1: Current specification is ambiguous and generation of PN23 is not clear. It can be noticed that 2 different interpretation (options) of PN23 sequence generation can exist.

Observation 2: It is not clear how PN sequence should be generated for TDD.

Proposal: It is proposed to clarify PN sequence generation for NR TMs to avoid ambiguity as proposed in CRs [10-13].

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **noted**.

**R4-2015379 CR to TS 38.141-1 clarification on PN23 sequence generation**

*Type: CR For: Agreement  
 38.141-1 v15.7.0 CR-0160 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces clarification to PN23 sequence generation in data content section for NR test models describes in [1], and clarify whether the same PN23 sequence is used for all PDCCH/PDSCH or individual PN23 sequence is used for each PDCCH/PDSCH in TMs with multi-users. Also clarification for TDD case is added.

[1] R4-2015378 On PN23 sequence generation for data content for NR test models, Nokia, Nokia Shanghai Bell

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **postponed**.

**R4-2015380 CR to TS 38.141-1 clarification on PN23 sequence generation**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0161 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **withdrawn**.

**R4-2015381 CR to TS 38.141-2 clarification on PN23 sequence generation**

*Type: CR For: Agreement  
 38.141-2 v15.7.0 CR-0237 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces clarification to PN23 sequence generation in data content section for NR test models describes in [1], and clarify whether the same PN23 sequence is used for all PDCCH/PDSCH or individual PN23 sequence is used for each PDCCH/PDSCH in TMs with multi-users. Also clarification for TDD case is added.

[1] R4-2015378 On PN23 sequence generation for data content for NR test models, Nokia, Nokia Shanghai Bell

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **postponed**.

**R4-2015382 CR to TS 38.141-2 clarification on PN23 sequence generation**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0238 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **withdrawn**.

**R4-2016067 Discussion on CLTA maximum height**

*Type: discussion For: Discussion  
 Source: Huawei*

**Abstract:**

Discuss remaining options on CLTA height modification form WF last meeting.

Proposal 1: Update CLTA definition according to option 1.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **noted**.

**R4-2016070 CR to TS 38.141-2 - Update CLTA definition, Rel-15**

*Type: CR For: Agreement  
 38.141-2 v15.7.0 CR-0247 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

The current CLTA definition can lead to unfeasibly large low band CLTA when testing high band systems. The definition has been added to maintain test integrety with smaller antennas.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **not pursued**.

**R4-2016071 CR to TS 38.141-2 - Update CLTA definition, Rel-16**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0248 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Implement changes to CLTA height

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **withdrawn**.

**R4-2016072 Discussion on co-location for adjacent bands**

*Type: discussion For: Discussion  
 Source: Huawei*

**Abstract:**

Discuss issue with co-location requirements for adjacent bands.

Proposal 1: Update CLTA definition according to option 1.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **noted**.

**R4-2016284 On selecting CLTA maximum height**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

At the last RAN4#96-e meeting, a way forward on selecting CLTA maximum height [1] was approved with two possible options for down selecting.

This document evaluates the two options and concludes with our proposal.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **noted**.

**R4-2016286 CR to TS 38.141-2: Out-of-band co-location test antenna definition**

*Type: CR For: Agreement  
 38.141-2 v15.7.0 CR-0252 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

There exist cases where testing becomes impractical with the current CLTA definition.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **not pursued**.

**R4-2016287 CR to TS 38.141-2: Out-of-band co-location test antenna definition**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0253 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The vertical radiating dimension definition is added to the out-of-band CLTA.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **withdrawn**.

#### 4.5.3 Conducted conformance testing (38.141-1) [NR\_newRAT-Perf]

#### 4.5.4 Radiated conformance testing (38.141-2) [NR\_newRAT-Perf]

**R4-2014394 Discussion on out of band CLTA maximum height**

*Type: discussion For: Discussion  
 Source: CATT*

**Abstract:**

Observation 1: The availability condition for option 1 is not clear, which may affect the selection of out-of-band CLTA and requirement verification.

Observation 2: For option 1, two candidate out-of-band CLTAs might be available for a specific co-located band, which will result in different out-of-band CLTA selection and different test results.

Observation 3: For option 1, there is the case that no candidate out-of-band CLTA for a specific co-located band is available.

Observation 4: 1.5m height limit could be used as the height limit for option 2.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **noted**.

**R4-2014395 CR for TS 38.141-2: Correction on half-power vertical beam width for the out of band CLTA**

*Type: CR For: Agreement  
 38.141-2 v15.7.0 CR-0226 Cat: F (Rel-15)  
  
 Source: CATT*

**Abstract:**

When the out of band is much lower than the operating band of test object antenna, the existing half-power vertical beam width definition for the out of band CLTA will result in unrealistic antenna height.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **not pursued**.

**R4-2014396 CR for TS 38.141-2: Correction on half-power vertical beam width for the out of band CLTA**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0227 Cat: A (Rel-16)  
  
 Source: CATT*

**Abstract:**

When the out of band is much lower than the operating band of test object antenna, the existing half-power vertical beam width definition for the out of band CLTA will result in unrealistic antenna height.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **withdrawn**.

**R4-2015716 CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics**

*Type: CR For: Agreement  
 38.141-2 v15.7.0 CR-0242 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Correction to the CLTA length

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **not pursued**.

**R4-2017587 CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics**

*Type: CR For: Agreement  
 38.141-2 v15.7.0 CR-0242 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **withdrawn**.

**R4-2015717 CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0243 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Correction to the CLTA length

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **withdrawn**.

**R4-2016152 CR to 38.141-2: Annex C correction on frequency range of FR2 TT table (C.2)**

*Type: CR For: Agreement  
 38.141-2 v15.7.0 CR-0249 Cat: F (Rel-15)  
  
 Source: Keysight Technologies UK Ltd*

**Abstract:**

During study to prepare MU and TT value in TR 38.817-02 documents, study was conducted up to 40GHz. Also with n259 WI, it was looked at up to 43.5GHz. However, in 38.141-2, TT tables for FR2 Rx was left as frequency range up to upper FR2 range which is not correct because study wasn’t done up to such high frequency. Studied value up to 43.5G should not be applied up to 52.6GHz, it is large enough difference to use existing value. Also, during discussion, it was agreed that MU/TT study would be conducted when new band will be added.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **revised to R4-2017592**.

**R4-2017592 CR to 38.141-2: Annex C correction on frequency range of FR2 TT table (C.2)**

*Type: CR For: Agreement  
 38.141-2 v15.7.0 CR-0249 rev 1 Cat: F (Rel-15)  
  
 Source: Keysight Technologies UK Ltd*

(Replaces R4-2016152)

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016153 CR to 38.141-2: Annex C correction on frequency range of FR2 TT table (C.2)**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0250 Cat: A (Rel-16)  
  
 Source: Keysight Technologies UK Ltd*

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **withdrawn**.

**R4-2017655 CR to 38.141-2: Annex C correction on frequency range of FR2 TT table (C.2)**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0257 Cat: F (Rel-16)  
  
 Source: Keysight Technologies UK Ltd*

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **agreed**.

**R4-2016289 Discussions on TRP procedures**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution discusses the open issue related two TRP measurement procedures, namely two orthogonal cuts with pattern multiplication and beam-based directions.

Proposal 1: A numerical form of the TRP integral for the two orthogonal cuts with pattern multiplication is defined to allow computation of TRP estimate from discrete data samples.

Proposal 2: Criteria for determining whether correlation exists before applying the beam-based directions procedure should be added to the TR 37.941 as background information, which are as follows:

(a) Maximum radiation of unwanted emissions occurs in the same direction as the wanted signal.

(b) The main lobe of the wanted signal and the unwanted emissions with respect to the axis of maximum radiation should have the same symmetry.

(c) HPBW in the azimuth and elevation direction for the unwanted emissions should correspond to those of the wanted signal.

(d) The directivity-beamwidth product of the unwanted emissions should correspond to that for the wanted signal.

**Discussion:**

See email discussion summary for [97e][303] NR\_Conformance\_Maintenance in R4-2017401.

**Decision:** The document was **noted**.

### 4.6 BS EMC [NR\_newRAT-Core]

**R4-2017402 Email discussion summary for [97e][304] NR\_EMC**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

**Discussion:**

The contribution summarized email discussion thread [97e][304] NR\_EMC. The email thread was moderated by Wubin Zhou (ShenZhen Zhongxing Shitong) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017604**.

**R4-2017604 Email discussion summary for [97e][304] NR\_EMC**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

(Replaces R4-2017402)

**Discussion:**

The contribution summarized email discussion thread [97e][304] NR\_EMC. The email thread was moderated by Wubin Zhou (ShenZhen Zhongxing Shitong) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2015958 CR to TS 38.113: correction of the scope and other technical improvements, Rel-15**

*Type: CR For: Agreement  
 38.113 v15.11.0 CR-0029 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

Multiple technical improvements were incorporated into TS 38.113, e.g. clarifiaction to the scope and redundant text, clarification on the test methodology for RF electromagnetic field, and more.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **revised to R4-2017441**.

**R4-2017441 CR to TS 38.113: correction of the scope and other technical improvements, Rel-15**

*Type: CR For: Agreement  
 38.113 v15.11.0 CR-0029 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2015958)

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **agreed**.

**R4-2015959 CR to TS 38.113: correction of the scope and other technical improvements, Rel-16**

*Type: CR For: Agreement  
 38.113 v16.1.0 CR-0030 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Multiple technical improvements were incorporated into TS 38.113, e.g. clarifiaction to the scope and redundant text, clarification on the test methodology for RF electromagnetic field, and more.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **agreed**.

#### 4.6.1 Core requirements [NR\_newRAT-Core]

##### 4.6.1.1 Emission requirements [NR\_newRAT-Core]

##### 4.6.1.2 Immunity requirements [NR\_newRAT-Core]

**R4-2015568 CR to TS 38.113 correcting Exclusion Bands Title, Release 15**

*Type: CR For: Agreement  
 38.113 v15.11.0 CR-0027 Cat: D (Rel-15)  
  
 Source: Ericsson Inc.*

**Abstract:**

Correction to include missing title in section 4.4 (Exclusion Bands).

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **not pursued**.

**R4-2015569 CR to TS 38.113 correcting Exclusion Bands Title, Release 16**

*Type: CR For: Agreement  
 38.113 v16.1.0 CR-0028 Cat: A (Rel-16)  
  
 Source: Ericsson Inc.*

**Abstract:**

Correction to include missing title in section 4.4 (Exclusion Bands).

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **withdrawn**.

#### 4.6.2 Performance requirements [NR\_newRAT-Perf]

**R4-2015100 CR to TS 37.113 on Voltage dips and interruptions, Release 15**

*Type: CR For: Agreement  
 37.113 v15.9.0 CR-0110 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Specification of the Voltage dips and interruptions (Test method and levels) requirement is not aligned with IEC 61000411, nor with the NR BS EMC specification. Performance criteria is updated to reflect considerations on the test levels.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **revised to R4-2017435**.

**R4-2017435 CR to TS 37.113 on Voltage dips and interruptions, Release 15**

*Type: CR For: Agreement  
 37.113 v15.9.0 CR-0110 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2015100)

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **agreed**.

**R4-2015101 CR to TS 37.113 on Voltage dips and interruptions, Release 16**

*Type: CR For: Agreement  
 37.113 v16.0.0 CR-0111 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Specification of the Voltage dips and interruptions (Test method and levels) requirement is not aligned with IEC 61000411, nor with the NR BS EMC specification. Performance criteria is updated to reflect considerations on the test levels.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **revised to R4-2017436**.

**R4-2017436 CR to TS 37.113 on Voltage dips and interruptions, Release 16**

*Type: CR For: Agreement  
 37.113 v16.0.0 CR-0111 rev 1 Cat: A (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015101)

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **agreed**.

**R4-2015102 CR to TS 38.113 on Voltage dips and interruptions, Release 15**

*Type: CR For: Agreement  
 38.113 v15.11.0 CR-0023 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Performance criteria is updated to reflect considerations on the test levels.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **revised to R4-2017437**.

**R4-2017437 CR to TS 38.113 on Voltage dips and interruptions, Release 15**

*Type: CR For: Agreement  
 38.113 v15.11.0 CR-0023 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2015102)

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **agreed**.

**R4-2015103 CR to TS 38.113 on Voltage dips and interruptions, Release 16**

*Type: CR For: Agreement  
 38.113 v16.1.0 CR-0024 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Performance criteria is updated to reflect considerations on the test levels.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **revised to R4-2017438**.

**R4-2017438 CR to TS 38.113 on Voltage dips and interruptions, Release 16**

*Type: CR For: Agreement  
 38.113 v16.1.0 CR-0024 rev 1 Cat: A (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015103)

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **agreed**.

**R4-2015104 CR to TS 38.113 on Performance criteria for transient phenomena, Release 15**

*Type: CR For: Agreement  
 38.113 v15.11.0 CR-0025 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Performance criteria for transient phenomena is updated to reflect alignment both with TS 37.113 MSR EMC (which includes also NR) standard and ETSI considerations.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **revised to R4-2017439**.

**R4-2017439 CR to TS 38.113 on Performance criteria for transient phenomena, Release 15**

*Type: CR For: Agreement  
 38.113 v15.11.0 CR-0025 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2015104)

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **not pursued**.

**R4-2015105 CR to TS 38.113 on Performance criteria for transient phenomena, Release 16**

*Type: CR For: Agreement  
 38.113 v16.1.0 CR-0026 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Performance criteria for transient phenomena is updated to reflect alignment both with TS 37.113 MSR EMC (which includes also NR) standard and ETSI considerations.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **not pursued**.

**R4-2017440 CR to TS 38.113 on Performance criteria for transient phenomena, Release 16**

*Type: CR For: Agreement  
 38.113 v16.1.0 CR-0026 rev 1 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **withdrawn**.

### 4.7 RRM core requirements maintenance (38.133/36.133) [NR\_newRAT-Core]

**R4-2017000 Email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][201] NR\_NewRAT\_RRM\_Core. The topic areas for discussion were RRM Core maintenance. The email thread was moderated by Xizeng Dai (Huawei) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017271**.

**R4-2017271 Email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2017000)

**Discussion:**

The contribution summarized email discussion thread [97e][201] NR\_NewRAT\_RRM\_Core. The topic areas for discussion were RRM Core maintenance. The email thread was moderated by Xizeng Dai (Huawei) and treated during RRM session chaired by Andrey Chervyakov (Intel).

1st round email discussion conclusions

|  |
| --- |
| **Topic #1: RRM measurement**  **Topic #2: Scell activation**  Issue 2-1-1: Applicability related to ssb-PositionInBurst and TCI  Agreement   * In Rel-15, clarify that if ssb-PositionInBurst indicates multiple SSBs but no TCI indication is provided, the requirement for unknown SCell activation is not applied.   + FFS whether TCI indication is provided in the same MAC PDU with SCell activation for unknown or before CSI-RS reception   **Topic #3: Beam management**  Issue 3-1: CSI-RS bandwidth condition for beam management  Agreement   * Add the condition that CSI-RS bandwidth ≥24 PRBs for BFD and CBD requirements.   **Topic #4: BWP switching**  Issue 4-2: Clarification on BWP configuration(s) for active BWP switch  Agreement   * Update applicability of current RRC based BWP switch to only PCell or PScell in Rel-15.   **Topic #5: TCI switching**  **Topic #6: Others** |

GTW session (November 11, 2020)

|  |
| --- |
| **Issue 2-1-1: Applicability related to ssb-PositionInBurst and TCI**   * Proposals   + For Rel-15, define applicability conditions for FR1 unknown SCell activation     - Option 1 (NEC, Ericsson, ZTE, Huawei, Apple, Nokia, MTK, QC): The current requirement for unknown SCell activation is applied of one of the following conditions is met:       * Condition 1:         + ‘*ssb-PositionInBurst*’ indicates only one SSB is being actually transmitted       * Condition 2:         + ‘*ssb-PositionInBurst*’ indicates multiple SSBs and TCI indication is provided in same MAC PDU with SCell activation       * Condition 3 (NEC, Ericsson, ZTE):         + ‘*ssb-PositionInBurst*’ indicates multiple SSBs, and TCI indication is received at UE before CSI-RS reception, and the side condition Ês/Iot ≥ -2dB is fulfilled.       * Condition 4 (Huawei, Apple):         + ‘*ssb-PositionInBurst*’ indicates multiple SSBs, and the Es/Iot for at least one CSI-RS for CSI that UE is configured to measure is >= -2dB.     - Option 2: when ‘ssb-PositionInBurst’ indicates multiple SSBs but no TCI indication is provided in the same MAC PDU, Introducing T\_(uncertainty,MAC,FR1) in FR1 unknown SCell activation   + For Rel-16, how to handle the requirement for unknown SCell activation     - Option 1 (default, MTK, QC): Keep the same requirement and applicability conditions as in Rel-15     - Option 2 (MTK, QC): When ‘ssb-PositionInBurst’ indicates multiple SSBs but no TCI indication is provided in the same MAC PDU, Introducing T\_(uncertainty,MAC,FR1) in FR1 unknown SCell activation. * Discussion:   + MTK: Concern on Condition 3. Current requirements do not include TCI processing time and will require modification of requirements. Concern on Condition 4. UE will need to update implementation.   + Apple: Same concern as MTK for Condition 3. The timing point is unclear. For Condition 4, network may configure multiple CSI-RS for CSI and UE can choose one. Suggest another option – keep condition 1 and 2 only for Rel-15. No requirements for other cases.   + QC: Same view as MTK and Apple. For Rel-16 prefer to have a more complete solution   + Huawei: prefer to further discuss R16 solution * Agreement   + For Rel-15, define applicability conditions for FR1 unknown SCell activation     - The current requirement for unknown SCell activation is applied of one of the following conditions is met:       * Condition 1:         + ‘*ssb-PositionInBurst*’ indicates only one SSB is being actually transmitted       * Condition 2:         + ‘*ssb-PositionInBurst*’ indicates multiple SSBs and TCI indication is provided in same MAC PDU with SCell activation     - No requirements will be defined for other cases   **Issue 2-2: SSB-less SCell activation delay requirement**   * Proposal: * RAN4 to define SSB-less FR1 SCell activation delay requirement as follows:   + If the SCell being activated belongs to FR1 and if there is at least one active serving cell contiguous to the Scell on that FR1 band, if the UE [supporting *scellWithoutSSB*] is not provided with any SMTC for the target SCell, Tactivation\_time is 3 ms [, provided     - the RS (s) of SCell being activated is (are) QCL-TypeA with TRS (s) of the SCell being activated and the TRS (s) is (are) QCL-TypeC with SSB (s) of one active serving cell on that FR1 band.]   + FFS on non-contiguous intra-band CA * Discussion: * MTK: Same view as for previous topic. This is a too late optimization and legacy UE may not be able to meet the requirement. * ZTE: We still have a chance to specify the requirement which all UEs can pass. Existing serving cell can be PCell or PSCell. * QC: No critical issue to introduce requirements since we already have requirements for FR2. * Apple: We can compromise to introduce intra-band contiguous case in Rel-15. Prefer not to handle non-contiguous CA case. * MTK: This is Rel-15 feature. We can follow the approach similar to other features like multiple SCell activation, UL spatial relation and postpone to Rel-16 * QC: scellWithoutSSB is mandatory with capability signalling in R15. R15 should be able to do it and our assumption is that MAC CE shall be processed within 3ms. We are not tightening any requirements comparing to the legacy. We can limit to intra-band contiguous and address other comments. * MTK: Currently we don’t have any requirements. For FR1 UE may have a different design and not meet the requirement. * ZTE: what it the delay which is acceptable to MTK? * HW: we can use capability to differentiate UE capabilities * MTK: we don’t have exact values. R15 UE can support the feature but not meet the requirement. * QC: insist to consider R15 requirements * Chair: continue discussion whether R15 and/or R16 requirements shall be defined. Aim to conclude in RAN4 98e.   **Issue 4-2: Clarification on BWP configuration(s) for active BWP switch**   * Agreements   + Send LS to RAN2 clarifying applicability of RRC based switch to SCell   + Update Editor’s note as:     - FFS if RRC based BWP switch is applicable to SCell   + RRC based BWP switch requirements for SCell defined in Rel-15 can be updated based on RAN2 response, if needed   + Requirements for RRC based BWP switch for SCell (Rel-16 onwards)     - Can be updated to follow RAN2’s agreements in Rel-16, if needed   **Issue 1-1-1: How to capture inter-RAT MO on NR serving CC configured by LTE MN**   * Can we agree on the proposal that the NR inter-RAT MO on NR serving CC configured by LTE MN shall be calculated in CSSF outside MG?   + Yes (Apple, MTK, Ericsson, Huawei)   + No (Nokia, ZTE) * Discussion   + Nokia: ok with majority   + MTK: do we need to tighten the requirements for intra-frequency within gap     - Nokia: need further discussion     - E///: for the scaling in CSSF we should not have double counting. Then this would mean tightening the requirement.   + MTK: The current implementation will follow existing requirement and we should not have any tightening   + Huawei: In our understanding the measurements are done outside gap   + Apple: We have inter-RAT measurements within and outside gap. We don’t think it will tighten the current CSSF within gap case   + ZTE: inter-RAT measurements can be done within or outside gap depending on BWP or other factors. Don’t understand what is tightened or relaxed requirements   + MTK: Based on 38.133 Inter-RAT MO is always within the gap     - Apple, E///: in 36.133 there is a different definition   + MTK: need more time to check   + E///: it is ok for existing implementations not to meet the updated requirements and we can further discuss how to do it.   + Chair: continue discussion |

**Decision:** The document was **noted**.

**R4-2017035 WF on SSB-less SCell activation delay requirement**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **noted**.

**R4-2017039 WF on RRC based BWP switching for SCell**

*Type: other For: discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **approved**.

**R4-2017040 LS on RRC based BWP switching for SCell**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **approved**.

**R4-2017331 WF on CSSF calculation for Inter-RAT MO**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **approved**.

**R4-2014237 Discussion on RRC based BWP switch for Scell**

*Type: discussion For: Discussion  
 Source: Apple*

**Abstract:**

Observation #1: RRC based BWP switch by RRC re-configuration of firstActiveUplinkBWP-Id is not allowed for Scell.

Proposal #1: Update applicability of current RRC based BWP switch to only PCell or PScell.

Proposal #2: Discuss further on how to extend RRC based switching delay requirement to be applicable to SCell

Proposal#3: Send LS to RAN2 to clarify how RRC based BWP switch can be applicable to SCell.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **noted**.

**R4-2014238 CR on Applicability of RRC based BWP switch requirements - Rel15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1141 Cat: F (Rel-15)  
  
 Source: Apple*

**Abstract:**

RRC based BWP switch is not allowed for SCell with change to firstActiveDownlinkBWP-Id via RRC configuration. The current requirements for RRC based TCI state switch are only applicable to PCell and PScell. We need to capture that current requirements are only applicable to PCell and PSCell. More details are captured in R4-2014237.

Remove Editor’s note.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **merged**.

**R4-2014239 CR on Applicability of RRC based BWP switch requirements - Rel16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1142 Cat: A (Rel-16)  
  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **withdrawn**.

**R4-2014268 CR on CSI-RS BW condition for BFD/CBD R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1145 Cat: F (Rel-15)  
  
 Source: Apple*

**Abstract:**

In Previous RAN4 discussion, the CSI-RS based CBD/BFD requirement applies when CSI-RS BW≥24 PRBs, however, this side condition has not been captured explicitly in the TS38.133. Some companies thought it’s not necessary to capture this condition because the minimum configurable BW for CSI-RS BW is 24PRBs. However, it’s not correct since RAN2 has clarification in the CSI-RS configuration IE, as duplicated below,

RAN2 agreed that if the configured CSI-RS BW is larger than UE corresponding BWP size, UE shall assume the actual CSI-RS BW is same as the width of the that BWP; here the “corresponding BWP” in CBD/BFD scenario is the active BWP.

Based on the above defintion, if we don’t specify it explicitly in the spec, it would mislead engineers to assume that CSI-RS BW can be smaller than 24PRB for BFD/CBD requirement in case the UE active BWP size is smaller than 24 PRBs. We need to solve this ambiguity in the spec.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **revised to R4-2017037**.

**R4-2017037 CR on CSI-RS BW condition for BFD/CBD R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1145 rev 1 Cat: F (Rel-15)  
  
 Source: Apple*

(Replaces R4-2014268)

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2014269 CR on CSI-RS BW condition for BFD/CBD R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1146 Cat: A (Rel-16)  
  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2014270 On AP-CSI-RS based L1-RSRP measurement**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Apple, Huawei, HiSilicon*

**Abstract:**

Proposal 1: AP CSI-RS based L1-RSRP measurement shall not be performed within MG duration. But outside MG, if this AP CSI-RS for L1-RSRP measurement is overlapped with L3 RRM measurement RS, the AP CSI-RS based L1-RSRP measurement shall be prioritized.

Proposal 2:

- in TS38.133, RAN4 clarifies that scaling factor P=1 for AP CSI-RS based L1-RSRP measurement outside MG regardless of whether this AP CSI-RS is overlapped with L3 measurement RS or not.

- in TS38.133, RAN4 clarifies that longer SSB based L3 measurement period would be expected if SSB symbols for L3 measurement are colliding with AP CSI-RS for L1-RSRP.

- in TS38.133, RAN4 clarifies that AP CSI-RS based L1-RSRP measurement requirement is not applied for the case that AP CSI-RS is overlapped with MG.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **noted**.

**R4-2014271 CR on AP-CSI-RS based L1-RSRP measurement R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1147 Cat: F (Rel-15)  
  
 Source: Apple, Huawei, HiSilicon*

**Abstract:**

The AP CSI-RS based L1-RSRP measurement delay requirement is not accurate, as discussed in R4-2014270.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **revised to R4-2017038**.

**R4-2017038 CR on AP-CSI-RS based L1-RSRP measurement R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1147 rev 1 Cat: F (Rel-15)  
  
 Source: Apple, Huawei, HiSilicon*

(Replaces R4-2014271)

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2014272 CR on AP-CSI-RS based L1-RSRP measurement R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1148 Cat: A (Rel-16)  
  
 Source: Apple, Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2014273 On CSSF for R15 EN-DC**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Apple*

**Abstract:**

Proposal 1: the NR inter-RAT MO on NR serving CC configured by LTE MN shall be captured into CSSF outside MG:

Proposal 2: RAN4 CSSF outside MG design uses option 3, i.e., in EN-DC the CSSF without MG is determined by the number of MOs without MG configured from both LTE MN and NR SN, and if any two MOs from LTE MN and NR SN meet MO merging rule, they shall be counted as one single MO in MO number counting.

Proposal 3: the CSSF outside MG shall be updated as in this contribution.

Proposal 4: the NR inter-RAT MO configured by LTE MN shall be further divided into following types for CSSF inside MG,

Proposal 5: RAN4 CSSF inside MG design uses option 3, i.e., Mtot,i,j = Mintra,i,j + Minter,i,j : Total number of intra-frequency, inter-frequency and inter-RAT measurement objects which are candidates to be measured in gap j where the measurement object i is also a candidate. If any two MOs from LTE MN and NR SN meet MO merging rule, they shall be counted as one single MO in MO number counting. Otherwise Mtot,i,j equals 0.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **noted**.

**R4-2014274 CR on CSSF for R15 EN-DC**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1149 Cat: F (Rel-15)  
  
 Source: Apple*

**Abstract:**

The CSSF design for EN-DC shall consider the MOs configured from both LTE MN and NR SN in EN-DC.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **merged**.

**R4-2014565 Discussion of RRC based BWP switching on single CC**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Abstract:**

Proposal 1: Current single RRC based BWP switch delay requirement in Rel-15 is only applied for PCell or PScell.

Proposal 2: RRC based single BWP switch delay for SCell needs more discussion.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **noted**.

**R4-2014693 CR on carrier frequency range of PCell/PSCell for the maximum number of RLM-RS resources**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1195 Cat: F (Rel-15)  
  
 Source: CMCC*

**Abstract:**

In RAN#89-e meeting, CR (RP-201715, RP-201716) to TS 38.213 has been approved to extend 8 SSB support to the unpaired spectrum with carrier frequencies within FR1 larger than 1.88GHz.

In current TS 38.133, carrier frequency range of PCell/PSCell for the maximum number of RLM-RS resources (Table 8.1.1-2) is not aligned with RAN/RAN1 agreements.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2014694 CR on carrier frequency range of PCell/PSCell for the maximum number of RLM-RS resources**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1196 Cat: A (Rel-16)  
  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2014760 Remaining issues on RRM in R15**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **noted**.

**R4-2014761 CR on active BWP switch in R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1197 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

RRC-based BWP switch cannot apply for SCell.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **merged**.

**R4-2014762 CR on active BWP switch in R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1198 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

RRC-based BWP switch cannot apply for SCell.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **merged**.

**R4-2014763 CR on active TCI state switching delay in R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1199 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

On 8.10.3,

The requirement doesn’t specify for L1-RSRP measurement once NW configures both SSB and CSI-RS for measurement.

On 8.10.6,

For active TCI state list update, TOk is redundant and equals to 1, because the new target TCI state should not be in the old active TCI state list. Otherwise, this update is not necessary.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **postponed**.

**R4-2014764 CR on active TCI state switching delay in R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1200 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

On 8.10.3,

The requirement doesn’t specify for L1-RSRP measurement once NW configures both SSB and CSI-RS for measurement.

On 8.10.6,

For active TCI state list update, TOk is redundant and equals to 1, because the new target TCI state should not be in the old active TCI state list. Otherwise, this update is not necessary.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **withdrawn**.

**R4-2014765 CR on MO merge in R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1201 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

When both MN and SN configures MOs and the configured NR frequency layers shall be counted only once, UE will be confused on the Klayer1\_measurement with different SSB-ToMeasure indications.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **revised to R4-2017336**.

**R4-2017336 CR on MO merge in R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1201 rev 1 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

(Replaces R4-2014765)

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2014766 CR on MO merge in R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1202 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

When both MN and SN configures MOs and the configured NR frequency layers shall be counted only once, UE will be confused on the Klayer1\_measurement with different SSB-ToMeasure indications.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **withdrawn**.

**R4-2015210 CR on MO merge**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1250 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2015159 Addition of symbol definitions**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1231 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Symbols have not been defineded in section 3.2 of 38.133 even though they are used in the other parts of the spec.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2015160 Addition of symbol definitions**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1232 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

There are very few of the symbols used in 38.133 which are defined in section 3.1 (only Tc and Ts are specified). This CR aligns with symbols in 36.133 while taking into account NR differences

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2015208 CR on BWP switch**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1248 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **withdrawn**.

**R4-2015209 CR on TCI state**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1249 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **withdrawn**.

**R4-2015300 CR to TS 38.133 on DCI based BWP switch requirements applicability**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1251 Cat: F (Rel-15)  
  
 Source: NEC*

**Abstract:**

DCI based BWP switch requirements are not applicable for DCI received through cross-carrier scheduling. This is not reflected in current specification.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **revised to R4-2017335**.

**R4-2017335 CR to TS 38.133 on DCI based BWP switch requirements applicability**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1251 rev 1 Cat: F (Rel-15)  
  
 Source: NEC*

(Replaces R4-2015300)

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2015306 CR to TS 38.133 on clarification of applicability of SCell activation requirements for unknown FR1 cell**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1253 Cat: F (Rel-15)  
  
 Source: NEC*

**Abstract:**

Applicability of SCell activation requirements for unknown FR1 cell are not clear in the specification as time for L1-RSRP measurement and report is NOT included in SCell activation requirements

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **merged**.

**R4-2015445 Correction to CSSF calculation R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1256 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In TS 36.133 clause 8.17.4.1 it is specified that the when UE is configured with EN-DC the intra-RAT NR measurement on NR serving carrier should obey requirements for NR intra-frequency measurements. On the other hand. Intra-frequency measurement shall be performed without MG if SSB is completely contained by active BWP. As a result, it implies that intra-RAT measurement on NR serving carrier shall also be performed without MG in some cases.

However, It conflicts with the calculation of CSSFoutside\_gap given in 38.133. cl. 9.1.5.1. One can observe that in RAN4’s understanding only intra-frequency meansurements are considered in CSSFoutside\_gap in Rel-15. Then UE don’t know how to calculate CSSF for inter-RAT NR measurments on serving carriers. Measurement delay requirement for inter-RAT measurement on serving carrier is unclear.

The carrier-specific scaling factor CSSFoutside\_gap,i for measurement object i derived in this chapter is applied to following measurement types:

-Intra-frequency measurement with no measurement gap in clause 9.2.5, when none of the SMTC occasions of this intra-frequency measurement object are overlapped by the measurement gap.

-Intra-frequency measurement with no measurement gap in clause 9.2.5, when part of the SMTC occasions of this intra-frequency measurement object are overlapped by the measurement gap.

UE is expected to conduct the measurement of this measurement object i only outside the measurement gaps.

For UE configured with the E-UTRA-NR dual connectivity operation, the carrier-specific scaling factor CSSFoutside\_gap,i for intra-frequency SSB-based measurements performed outside measurements gaps will be as specified in Table 9.1.5.1.1-1.

Table 9.1.5.1.1-1: CSSFoutside\_gap,i scaling factor for EN-DC mode

Scenario

CSSFoutside\_gap,i for FR1 PSCC

CSSFoutside\_gap,i for FR1 SCC

CSSFoutside\_gap,i for FR2 PSCC

CSSFoutside\_gap,i for FR2 SCC where neighbour cell measurement is required Note 2

CSSFoutside\_gap,i for FR2 SCC where neighbour cell measurement is not required

EN-DC with FR1 only CA

1

Number of configured FR1 SCell(s)

N/A

N/A

N/A

EN-DC with

FR2 only intra band CA

N/A

N/A

1

N/A

Number of configured FR2 SCells

EN-DC with

FR1 +FR2 CA (FR1 PSCell) Note 1

1

2×(Number of configured SCell(s)-1)

N/A

2

2×(Number of configured SCell(s)-1)

EN-DC with

FR1 +FR2 CA (FR2 PSCell) Note 1

N/A

Number of configured SCell(s)

1

N/A

Number of configured SCell(s)

Note 1:Only one NR FR1 operating band and one NR FR2 operating band are included for FR1+FR2 inter-band EN-DC.

Note 2:Selection of FR2 SCC where neighbour cell measurement is required follows clause 9.2.3.2.

So we purpose to take inter-RAT measurement on serving carrier into account in the calculation of CSSFoutside\_gap. To be more specific, the baseline assumption for CSSFoutside\_gap calculation is changed to:

UE equips two searchers;

One searcher is dedicated for intra-frequency measurement on PSCC if no inter-RAT measurement is configured on PSCC. If both inter-frequency and inter-RAT measurement on PSCC are configured, searcher is equally shared between intra-frequency and inter-RAT measurement on PSCC;

If a FR2 SCC is configured to UE and it is the first activated serving carrier in that band, it will use half the measurement capability of the second searcher.

All the intra-frequency measurements on other SCells and inter-RAT measurements on SCCs equally share the rest measurement capability of the second searcher.

In EN-DC, inter-frequency measurement and inter-RAT measurement on the same frequencies are always counted as two candidates when calculating CSSF\_within\_gap. However, when MO merging condition are satisfied they shall only be counted once. CSSF\_within\_gap is unneccessarily relexed. Same issue also exists in NR-DC when PCell and PSCell both configure inter-frequency measurements on the same frequency.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **postponed**.

**R4-2017034 Correction to CSSF calculation R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1256 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **withdrawn**.

**R4-2015446 Correction to CSSF calculation R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1257 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In TS 36.133 clause 8.17.4.1 it is specified that the when UE is configured with EN-DC the intra-RAT NR measurement on NR serving carrier should obey requirements for NR intra-frequency measurements. On the other hand. Intra-frequency measurement shall be performed without MG if SSB Is completely contained by active BWP. As a result, it implies that intra-RAT measurement on NR serving carrier shall also be performed without MG in some cases.

However, It conflicts with the calculation of CSSFoutside\_gap given in 38.133. cl. 9.1.5.1. One can observe that in RAN4’s understanding only intra-frequency meansurements are considered in CSSFoutside\_gap in Rel-15. Then UE don’t know how to calculate CSSF for inter-RAT NR measurments on serving carriers. Measurement delay requirement for inter-RAT measurement on serving carrier is unclear.

The carrier-specific scaling factor CSSFoutside\_gap,i for measurement object i derived in this chapter is applied to following measurement types:

-Intra-frequency measurement with no measurement gap in clause 9.2.5, when none of the SMTC occasions of this intra-frequency measurement object are overlapped by the measurement gap.

-Intra-frequency measurement with no measurement gap in clause 9.2.5, when part of the SMTC occasions of this intra-frequency measurement object are overlapped by the measurement gap.

UE is expected to conduct the measurement of this measurement object i only outside the measurement gaps.

For UE configured with the E-UTRA-NR dual connectivity operation, the carrier-specific scaling factor CSSFoutside\_gap,i for intra-frequency SSB-based measurements performed outside measurements gaps will be as specified in Table 9.1.5.1.1-1.

Table 9.1.5.1.1-1: CSSFoutside\_gap,i scaling factor for EN-DC mode

Scenario

CSSFoutside\_gap,i for FR1 PSCC

CSSFoutside\_gap,i for FR1 SCC

CSSFoutside\_gap,i for FR2 PSCC

CSSFoutside\_gap,i for FR2 SCC where neighbour cell measurement is required Note 2

CSSFoutside\_gap,i for FR2 SCC where neighbour cell measurement is not required

EN-DC with FR1 only CA

1

Number of configured FR1 SCell(s)

N/A

N/A

N/A

EN-DC with

FR2 only intra band CA

N/A

N/A

1

N/A

Number of configured FR2 SCells

EN-DC with

FR1 +FR2 CA (FR1 PSCell) Note 1

1

2×(Number of configured SCell(s)-1)

N/A

2

2×(Number of configured SCell(s)-1)

EN-DC with

FR1 +FR2 CA (FR2 PSCell) Note 1

N/A

Number of configured SCell(s)

1

N/A

Number of configured SCell(s)

Note 1:Only one NR FR1 operating band and one NR FR2 operating band are included for FR1+FR2 inter-band EN-DC.

Note 2:Selection of FR2 SCC where neighbour cell measurement is required follows clause 9.2.3.2.

So we purpose to take inter-RAT measurement on serving carrier into account in the calculation of CSSFoutside\_gap. To be more specific, the baseline assumption for CSSFoutside\_gap calculation is changed to:

UE equips two searchers;

One searcher is dedicated for intra-frequency measurement on PSCC if no inter-RAT measurement is configured on PSCC. If both inter-frequency and inter-RAT measurement on PSCC are configured, searcher is equally shared between intra-frequency and inter-RAT measurement on PSCC;

If a FR2 SCC is configured to UE and it is the first activated serving carrier in that band, it will use half the measurement capability of the second searcher.

All the intra-frequency measurements on other SCells and inter-RAT measurements on SCCs equally share the rest measurement capability of the second searcher.

In EN-DC, inter-frequency measurement and inter-RAT measurement on the same frequencies are always counted as two candidates when calculating CSSF\_within\_gap. However, when MO merging condition are satisfied they shall only be counted once. CSSF\_within\_gap is unneccessarily relexed. Same issue also exists in NR-DC when PCell and PSCell both configure inter-frequency measurements on the same frequency.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed.

Chair: Cover sheet needs to be corrected before the CR is agreed.

Chair: Please provide more details on why Cat F CR is used (not Cat A).

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **postponed**.

**R4-2015527 CR on BFD and CBD requirements**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1293 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Compared with the CSI-RS based RLM requirements, the condition that the CSI-RS resources are over the bandwidth ≥ 24 PRBs is missing. We had submitted corresponding CRs in RAN4#94-e-bis meeting, and some companies pointed that the minimum configurable BW of CSI-RS resource is 24 PRBs. In RAN4#95e meeting, the similar discussion was triggered and companies argued that the condition was needed to guaranteed that the CSI-RS resource for BFD and CBD within the active BWP is at least over 24 PRBs not only the configured CSI-RS BW. Thus, we propose the changes for CSI-RS based BFD and CBD to clarify the condtion.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **merged**.

**R4-2015528 CR on BFD and CBD requirements\_R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1294 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **withdrawn**.

**R4-2015529 CR on RRC-based BWP switch requirements**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1295 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

One of the remaining issues in the RAN4#96-e about BWP switching requirements is whether it is applicable for RRC-based BWP switch on SCell with more than one BWP configurations. After check the TS 38.133, it is only possible for an sPCell to change the active BWP by the firstActiveDownlinkBWP-Id or firstActiveUplinkBWP-Id via the RRC reconfiguration. For a actived SCell, the active BWP could be changed by RRC reconfiguration by reconfiguring the parameters of the active BWP without changing the ID. Thus, it is also applicable for an SCell to change the acitve BWP through RRC with more than one BWP configurations.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **revised to R4-2017342**.

**R4-2017342 CR on RRC-based BWP switch requirements**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1295 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015529)

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2015530 CR on RRC-based BWP switch requirements\_R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1296 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2015570 CR to 38.133: Correction to SCell activation delay requirements**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1301 Cat: F (Rel-15)  
  
 Source: ZTE*

**Abstract:**

It is based on mandatory UE capability whether UE supports configuration of SCell without SSB.

scellWithoutSSB

Defines whether the UE supports configuration of SCell that does not transmit SS/PBCH block. This is conditionally mandatory with capability signalling for intra-band CA but not supported for inter-band CA.

The UE capability has no differentiation of FR1 and FR2. However in TS38.133, the requirements for SCell activation without SSB are only specified for FR2 intra-band CA. So the corresponding requirements for FR1 intra-band CA should be added either.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **postponed**.

**R4-2015571 CR to 38.133 correction to SCell activation delay requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1302 Cat: A (Rel-16)  
  
 Source: ZTE*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **withdrawn**.

**R4-2015572 CR to 38.133: Correction to RRC based BWP switch requirements**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1303 Cat: F (Rel-15)  
  
 Source: ZTE*

**Abstract:**

In TS38.133 the requirements for RRC based BWP switch delay are specified for BWP switch triggered by RRC reconfiguration. However, according to TS38.331, the BWP switch can be triggered by RRC reconfiguration and RRC configuration (including RRCsetup message and RRCresume message).

The BWP switch delay, excluding RRC processing time, should be the same for both RRC configuration and RRC reconfiguration. So the current requirements are applicable to BWP switch triggered RRC configuration.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **postponed**.

**R4-2015573 CR to 38.133 correction to RRC based BWP switch requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1304 Cat: A (Rel-16)  
  
 Source: ZTE*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **withdrawn**.

**R4-2015672 [CR] Specify RRC processing delay in TCI state switching delay**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1310 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

In clause 8.10.5, the value of TRRC\_processing is not given nor defined.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2015673 [CR] Specify RRC processing delay in TCI state switching delay (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1311 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2015731 CR to remove intra-frequency ECID requirements for NE-DC 36133 R15**

*Type: CR For: Agreement  
 36.133 v15.11.0 CR-6974 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In current 36.133 measurement requirements are defined for Intra-frequency E-CID when UE is under NE-DC. However, in NE-DC NGC is connected to NR MN, and there is no LPP or NRPPa between NGC and LTE SN. In addition, in clause 5.5.3 of 36.331 it is specified that LTE UE Rx-Tx time difference measurement is only measured for PCell. Therefore, the Intra-frequency E-CID measurement requirements for NE-DC should be removed.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **postponed**.

**R4-2017343 CR to remove intra-frequency ECID requirements for NE-DC 36133 R15**

*Type: CR For: Agreement  
 36.133 v15.11.0 CR-6974 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **withdrawn**.

**R4-2015732 CR to remove intra-frequency ECID requirements for NE-DC 36133 R16**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6975 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **withdrawn**.

**R4-2015733 CR to remove inter-RAT ECID requirements for NE-DC 38133 R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1314 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In clause 9.4.1 of 38.133, the applicabalbe requirements for NR – LTE inter-RAT ECID measurement are defined. For measurements performed on LTE serving frequency, the intra-frequency requirements defined in 8.19.5 of 36.133 apply. However, there is no intra-frequency E-CID measurement that can be configured by LTE SN in NE-DC. Therefore, applicable requirements should be updated.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **revised to R4-2017344**.

**R4-2017344 CR to remove inter-RAT ECID requirements for NE-DC 38133 R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1314 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015733)

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **postponed**.

**R4-2015734 CR to remove inter-RAT ECID requirements for NE-DC 38133 R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1315 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **withdrawn**.

**R4-2015735 Discussion on remaining issues in Rel-15 SCell activation requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: The current FR1 SCell activation requirements apply provided that

- ‘ssb-PositionInBurst’ indicates only one SSB is being actually transmitted, or

- ‘ssb-PositionInBurst’ indicates multiple SSBs and TCI indication is provided in same MAC PDU with SCell activation, or

- the SCell is known and UE has reported the SCell with SSB index before the activation, or

- the Es/Iot for at least one CSI-RS for CSI that UE is configured to measure is >= -2dB.

Proposal 2: The current SCell activation requirements apply provided that the SSB of the to-be-activated SCell is within the first active DL BWP of the SCell.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **noted**.

**R4-2015736 CR on SCell activation requirements R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1316 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

As agreed in R4-2012240, RAN4 needs to capture the applicability of FR1 SCell activation requirements. In addition, the scenario where Scell SSB is outside SCell first active BWP needs to be addressed.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **revised to R4-2017036**.

**R4-2017036 CR on SCell activation requirements R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1316 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015736)

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2015737 CR on SCell activation requirements R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1317 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2015876 Introducing reference to the source of the Lmax and NRLM.**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1335 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The number of RLM-RS resources UE is required to be able to monitor is specified in TS38.213. Also the Lmax value for different frequency ranges is specified in 38.213. These numbers have been copied to RAN4 specification in Table 8.1.1-2. Currently there is no reference to the source of these numbers resulting risk of ambiquity on the requirement.. As defined in TR21.801, Annex C.1.4, duplication of concepts is not preferred and if cannot be avoided, reference should be provided. .

This change is not changing any UE requirement or behaviour.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **revised to R4-2017338**.

**R4-2017338 Introducing reference to the source of the Lmax and NRLM.**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1335 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015876)

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2015877 Introducing reference to the source of the Lmax and NRLM.**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1336 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2016022 CR 36.133 Removal of brackets for SFTD measurements**

*Type: CR For: Agreement  
 36.133 v15.11.0 CR-6989 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

The measurement period for SFTD measurements between E-UTRA PCell and NR PSCell in non-DRX has already been agreed to be Tmeasure\_SFTD1 = max(200,5 x SMTC period) ms since many meetings back. In the specification text there is however stray brackets, [5] x SMTC period, which signals that the measurement period would only be tentatively agreed.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2016023 CR 36.133 Removal of brackets for SFTD measurements (Rel-16)**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6990 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The measurement period for SFTD measurements between E-UTRA PCell and NR PSCell in non-DRX has already been agreed to be Tmeasure\_SFTD1 = max(200,5 x SMTC period) ms since many meetings back. In the specification text there is however stray brackets, [5]

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2016162 HARQ delay during RRC based BWP, CBW and TCI switching procedures**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper discussed impact of ACK delay on RRC based switching delay requirements (BWP, CBW and TCI state change).

Observation 1: RRC based BWP switching and UE specific CBW are serving cell procedure performed typically under higher SNR. Therefore, HARQ ACK may be delayed in rare circumstances.

Proposal 1: Clarify in the core requirement that if the ACK transmission for the received RRC takes longer than the RRC procedure delay for a procedure then the overall switching delay for that procedure may be extended.

Proposal 2: Proposal 1 is applicable for the following requirements:

- RRC based BWP switching delay

-UE specific CBW change delay and

- RRC based active TCI state switching delay.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **noted**.

**R4-2016373 CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1371 Cat: F (Rel-15)  
  
 Source: Apple*

**Abstract:**

Currently during RRC based active BWP switch and TCI state switch UE behavior for case when THARQ > TRRCProcessing is not captured. When THARQ > TRRCProcessing , UE might need additional time to send ACK/NACK and network might wait to switch BWP or TCI state after ACK is received. A longer switching delay is expected in this case.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **revised to R4-2017041**.

**R4-2017041 CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1371 rev 1 Cat: F (Rel-15)  
  
 Source: Apple*

(Replaces R4-2016373)

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **revised to R4-2017377**.

**R4-2017377 CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1371 rev 2 Cat: F (Rel-15)  
  
 Source: Apple*

(Replaces R4-2017041)

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2016374 CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1372 Cat: A (Rel-16)  
  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **revised to R4-2017380**.

**R4-2017380 CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1372 rev 1 Cat: A (Rel-16)  
  
 Source: Apple*

(Replaces R4-2016374)

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **agreed**.

**R4-2016580 CR to TCI activation in FR1**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1398 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

‘TCI indication’ is not included in FR1 SCell activation procedure and time for ‘L1-RSRP measurement and report’ is not include in unknown FR1 SCell activation requirement in the current version 38.133 spec.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **merged**.

**R4-2016581 CR to SSB-less SCell activation delay requirement for deactivated FR1 SCell**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1399 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

SSB-less SCell activation delay requirement for deactivated FR1 SCell is not defined in the current version 38.133 spec, whereas FR2 SCell activation requirements include SSB-less SCell activation latency.

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **postponed**.

**R4-2017307 CR to SSB-less SCell activation delay requirement for deactivated FR1 SCell**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1408 Cat: A (Rel-16)  
  
 Source: Qualcomm*

**Discussion:**

See email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core in R4-2017000.

**Decision:** The document was **withdrawn**.

### 4.8 RRM perf. requirements maintenance (38.133/36.133) [NR\_newRAT-Perf]

**R4-2017001 Email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][202] NR\_NewRAT\_RRM\_Perf. The topic areas for discussion were RRM Perf. maintenance. The email thread was moderated by Muhammad Kazmi (Ericsson) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017272**.

**R4-2017272 Email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2017001)

**Discussion:**

The contribution summarized email discussion thread [97e][202] NR\_NewRAT\_RRM\_Perf. The topic areas for discussion were RRM Perf. maintenance. The email thread was moderated by Muhammad Kazmi (Ericsson) and treated during RRM session chaired by Andrey Chervyakov (Intel).

1st round email discussion conclusions

|  |
| --- |
| **Topic #1: Correction to RRM test configuration**  **Topic #2: Correction to RRM tests**  Agreement: TRS configurations in test cases listed in R4-2016582 will be added in Release 15 in one big CR (one cat F CR and one cat A CR)  Chair: Qualcomm volunteered to provide CR in RAN4#98-e |

**Decision:** The document was **noted**.

**R4-2014017 RB allocation and Noc level in RLM Test cases**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1118 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) RLM test cases that use AoA Setup 3 and Spherical Coverage directions require a total power Io above the capability of current test equipment.

b) Test cases A.5.5.1.5, A.5.5.1.6, A.7.5.1.5, and A.7.5.1.6 with CSI-RS-based RLM in non-DRX mode do not specify the Noc level.

c) Some table note references are wrong and some [ ] remain.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked on the coversheet, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017044**.

**R4-2017044 RB allocation and Noc level in RLM Test cases**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1118 rev 1 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

(Replaces R4-2014017)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014018 RB allocation and Noc level in RLM Test cases**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1119 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) Change RLM test cases that use AoA Setup 3 and Spherical Coverage directions to use 24RBs to reduce the Io, and define a new OCNG pattern OP.5.

b) Specify missing Noc -92.1dBm/15kHz for Test cases A.5.5.1.5, A.5.5.1.6, A.7.5.1.5, and A.7.5.1.6.

c) Corr

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014019 Update FR2 event-triggered reporting Test cases in A.5.6, A.7.6**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1120 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) FR2 Intra-frequency Event-triggered reporting Test cases do not specify the subcarrier spacing for the PDSCH and PDCCH Data channels.

b) The test configuration is missing from Io for A.5.6.1.2, A.5.6.1.4, A.7.6.1.2 and A.7.6.1.4.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014020 Update FR2 event-triggered reporting Test cases in A.5.6, A.7.6**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1121 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

Specify the subcarrier spacing as 120kHz for the PDSCH and PDCCH Data channels in Intra-frequency Event-triggered reporting Test cases.

Add test configurations to Io for A.5.6.1.2, A.5.6.1.4, A.7.6.1.2 and A.7.6.1.4.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014021 240kHz SSB SCS Configuration for FR2 SS-RSRP Test cases**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1122 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) The FR2 Inter-frequency SS-RSRP RRM Test cases are missing parameters for configurations with 240 kHz SSB SCS.

b) The FR2 Inter-frequency SS-RSRP RRM Test cases do not specify the subcarrier spacing for the PDSCH and PDCCH Data channels.

c) The UE Beam assumption is wrongly stated in Table A.7.7.1.1.2-3.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014022 240kHz SSB SCS Configuration for FR2 SS-RSRP Test cases**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1123 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) Add parameters for configurations with 240 kHz SSB SCS in Tables A.5.7.1.2.2-2 and A.7.7.1.2.2-2.

b) Specify the subcarrier spacing as 120kHz for the PDSCH and PDCCH Data channels.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014023 Correct UE beam assumption for Test Cases in A.5.6**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1124 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) For some test cases in A.5.6 the Cell 2 UE beam assumption is stated to be “Rough”, but Cell 2 is FR1 and the UE beam assumption is not applicable.

b) Some test cases in A.5.6 state that two FR1 NR carrier frequencies are used, but one of the NR carriers is FR2.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked on the coversheet, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017045**.

**R4-2017045 Correct UE beam assumption for Test Cases in A.5.6**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1124 rev 1 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

(Replaces R4-2014023)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014024 Correct UE beam assumption for Test Cases in A.5.6**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1125 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) Correct the FR1 Cell 2 UE beam assumption from "Rough" to N/A (not applicable).

b) As one NR cell is in FR2, update the misleading statement that both NR cells are FR1, and align with equivalent A.7.6 test cases.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014025 Modification of AG level in CORESET for RMC scheduling**

*Type: discussion For: Approval  
 Source: ANRITSU LTD*

**Abstract:**

In this contribution we report an identified issue with the CORESET for RMC scheduling in TS 38.133 clause A.3.1.3. With the current definitions in these RMC tables for both FDD and TDD, there is an issue with transmission of PUSCH (e.g. measurement report).

Proposal 1: Adjust the AG level of CORESET for RMC scheduling to enable transmitting 2 DCIs per slot.

Proposal 2: Keep the definitions of CORESET for RMC scheduling in A.3.1.3 in a same form from the current ones and do not separate them for SA and NSA.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **noted**.

**R4-2014026 Aggregation level of CORESET for RMC scheduling**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1126 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

Under the current definitions of RMC tables for both FDD and TDD in clause A.3.1.3, there is an issue with a transmission of PUSCH (e.g. measurement report) from a UE due to a lack of resources for PDCCH (DCI format 0-1, UL grant) from a test equipment.

Following conditions are causing the issue above.

DL RMC is allocated to all the DL slot.

Based on the aggregation level/ CORESET, only 1 grant per 1 slot can be transmitted. Thus simultaneous scheduling of PDSCH/PUSCH is unviable.

In a case that the standalone UE needs to transmit PUSCH (such as measurement report), simultaneous scheduling of PDSCH/ PUSCH is mandatory. Thus there is a need to correct AG level which enables sending 2 grants in 1 slot.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017042**.

**R4-2017042 Aggregation level of CORESET for RMC scheduling**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1126 rev 1 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

(Replaces R4-2014026)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014027 Aggregation level of CORESET for RMC scheduling**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1127 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

We propose to reduce the Aggregation level of CORESET for RMC scheduling to enable transmission of 2 DCIs per slot. The reasoning is provided in R4-2014025.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014028 Clarify FR1 NSA SS-SINR measurement TCs**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1128 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

Test Parameters table format is misleading, and is inconsistent with SS-RSRP, SS-RSRQ TCs.

Clause A.4.7.3.2.2 states that measurement gap is provided, but Table A.4.7.3.2.2-1 is missing gap configuration

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014029 Claify FR1 NSA SS-SINR measurement TCs**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1129 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

Update the Test Parameters table format to show that:

- TRS config is only for Cell 2

- Time offset with Cell 2 is only for Cell 3

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014046 FR1 Inter-frequency Event triggered Reporting tests in DRX**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1130 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

Incorrect Test Requirements:

-Test Purpose and Environment states that test 1&2 use per-UE gap, and test 3&4 use per-FR gap. However, in Test Requiments, it states that test 2 is with per-FR gap, and test 3 is with per-UE gap.

Format of Table A.4.6.2.6.1-3 is misleading:

-It seems that TRS is configured in both Cell 2 and Cell 3

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014047 FR1 Inter-frequency Event triggered Reporting tests in DRX**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1131 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

Update Test Requirements:

- Test 2: change per-FR gap to per-UE gap

- Test 3: change per-UE gap to per-FR gap

- Update Table A.4.6.2.6.1-3 format to show that TRS config is only for Cell 2

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014048 E-UTRAN**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1132 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

DRX configuration for E-UTRAN – NR Interruptions asynchronous test case is incorrect. Current spec setting is for NR DRX (DRX.6) instead of LTE DRX, but purpose of test states that LTE is in DRX. Similar to synchronous test equivalent (DRX.4). RAN5 test case 4.5.2.2 is already updated with correct setting.

In Table A.4.5.2.1.1-3 and A.4.5.2.2.1-3, Initial BWP Configurations are mistakenly defined as DLBWP.0 and there is no corresponding configuration.

Similar configurations for FR2 such as in Table A.5.5.2.1.1-3 should be applied to Table A.4.5.2.1.1-3 and A.4.5.2.2.1-3.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014049 E-UTRAN**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1133 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

Corrects DRX config parameter in Table A.4.5.2.2.1-2: DRX.6 -> DRX.4 (applicable to LTE)

Specifies BWP configurations fully

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014181 [CR] NR Perf Maintenance R15 Cat F**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1134 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

The following errors exist in the current test cases which mislead readers:

- In multiple tables, such as Table A.6.6.4.1.2-1, the Note shall be for Cell 1 not both cells.

- In clause A.7.5.8.1.1.1 and A.7.5.8.2.1.1, the configuration mentioned a second cell in EN-DC. However, the test is for NR SA and only one cell is configured.

- In Table A.7.6.2.1.1-3, the configurations should be for Cell 1 and Cell 2, separately.

- In Clause A.7.5.3.2.2, [TBD] exists.

**Discussion:**

The secretary asked what is the correct Release? It reads Rel-16 on the coversheet but the CR is allocated for Rel-15. See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **withdrawn**.

**R4-2014182 [CR] NR Perf Maintenance R16 Cat A**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1135 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **withdrawn**.

**R4-2014183 [CR] NR Perf Maintenance R16 Cat F**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1136 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

The following errors exist in the current test cases which mislead readers:

- In Table A.6.5.6.1.2.1-3, the configuration is for Cell 1 not Cell 2. The note should be for Cell 1 only since there is only one cell in the test.

Note that those errors are not in the R15 specifications, thus a separate R16 Category F CR is submitted to correct them.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **withdrawn**.

**R4-2014231 Maintenance CR on SA inter-frequency event triggered reporting tests for FR1**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1139 Cat: F (Rel-16)  
  
 Source: Apple*

**Abstract:**

There are some typos in FR1 SA inter-frequency event triggered reporting test cases.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014372 CR on TS38.133 for cell activation and deactivation test case**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1159 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

For the SCell activation and deactivation, in current specificaiton, the UE can only report the CSI report in slot (m+k) or slot ( However, the interruption would not impact other serving cell all the time between slot (m+k) and slot (. Thus, the UE shall be allowed to report the first CSI report in slot (m+k) or in the next available uplink resource for CSI reporting if slot (m+k) was subject to interruption. On the other hand, the similar problem is fixed in A.6.5.3.1.

According to TS 38.331 as follows, for SCS 15kHz, the shortest of CSI report periodicity is 4 slots, i.e. 2ms or 4 subframes.

CSI-ReportPeriodicityAndOffset ::= CHOICE {

slots4 INTEGER(0..3),

slots5 INTEGER(0..4),

slots8 INTEGER(0..7),

slots10 INTEGER(0..9),

slots16 INTEGER(0..15),

slots20 INTEGER(0..19),

slots40 INTEGER(0..39),

slots80 INTEGER(0..79),

slots160 INTEGER(0..159),

slots320 INTEGER(0..319)

}

However, the CSI report periodicity in Table A.4.5.3.1.1-2 and Table A.6.5.3.1.1-2 is 2 subframes for 15 kHz. Thus, it is corrected in this CR.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014373 CR on TS38.133 for cell activation and deactivation test case**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1160 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014374 CR on TS38.133 for cell reselection test case**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1161 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

In order to UE can measure the intra-frequency cell, the value of SintrasearchP in Table A.6.1.1.1.2-3 shall be set to 60.

The parameter names, e.g. Sintrasearch, Threshx, high, Threshserving, low, Threshx, low, shall align with TS 38.304 and TS 36.304.

In NR SA, the terminology “Tracking area update procedure” is replaced by “Registration procedure for mobility and periodic registration update” and the wording is corrected in clause A.6.1.1.1, A.6.1.1.2, A.7.1.1.1 and A.7.1.1.2 in this CR.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017046**.

**R4-2017046 CR on TS38.133 for cell reselection test case**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1161 rev 1 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

(Replaces R4-2014374)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017334**.

**R4-2017334 CR on TS38.133 for cell reselection test case**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1161 rev 2 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

(Replaces R4-2017046)

**Discussion:**

Secretary: It reads revision number 1 on the cover page but the Tdoc is reserved for revision 2 and revised twice. Please request a Tdoc number for a revision and use revision number 3 on the cover page.

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017368**.

**R4-2017368 CR on TS38.133 for cell reselection test case**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1161 rev 3 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

(Replaces R4-2017334)

**Discussion:**

Chair: come back in GTW. CR cover sheet issues in 7334

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017378**.

**R4-2017378 CR on TS38.133 for cell reselection test case**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1161 rev 4 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

(Replaces R4-2017368)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014375 CR on TS38.133 for cell reselection test case**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1162 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014376 Correction of active BWP switch test case**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1163 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

In active BWP switching test case, i.e. A.7.5.6.1.1 and A.7.5.6.1.2, PCell is configured with two BWPs (BWP-1 and BWP-2). However, in current specification, the sentence “UE shall be continuously scheduled on PSCell’s BWP-1 during T3” is incorrect. It is fixed in this CR.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017047**.

**R4-2017047 Correction of active BWP switch test case**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1163 rev 1 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

(Replaces R4-2014376)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014377 CR on TS38.133 for active BWP switch test cases**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1164 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014406 CR for TS38.133 Rel-15, Correction for RRM core and test cases**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1167 Cat: F (Rel-15)  
  
 Source: CATT*

**Abstract:**

In A.6.1.2.2, second time duration is marked as “T2T3”, in A.6.1.2.2.2, the number of time periods is incorrect.

In A.7.1.1.2, the Io for 240kHz SSB SCS are incorrect.

In Table A.6.1.2.1.2-3, Initial DL BWP configuration and Initial UL BWP configuration are incorrect.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014407 CR for TS38.133 Rel-16, Correction for RRM core and test cases**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1168 Cat: A (Rel-16)  
  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014591 Draft CR on correcting SSB and RACH configuration in CSI-RS based beam failure detection and link recovery tests**

*Type: draftCR For: Endorsement  
 38.133 v15.11.0  
 Source: Qualcomm CDMA Technologies*

**Abstract:**

The tables for some of FR2 PRACH configurations are not indexed.

The existing sections of CSI-RS based BFD/CBD tests do not mention RACH configurations.

The configured CSI-RS resources in test follow CSI-RS.1.2/CSI-RS.2.2/CSI-RS.3.2 resource configurations. Those CSI-RS resources are QCLed to TCI state 0 (SSB 0) and TCI state 1 (SSB 1). But, SSB config only allows one SSB in the SS burst set (SSB.3 FR1, SSB.1 FR2).

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017048**.

**R4-2017048 CR on correcting SSB and RACH configuration in CSI-RS based beam failure detection and link recovery tests**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1404 Cat: F (Rel-15)  
  
 Source: Qualcomm CDMA Technologies*

(Replaces R4-2014591)

**Discussion:**

Chair: come back in GTW. Not compliant with 3GPP styles. Cannot be implemented. Tdoc can be endorsed and needs to be resubmitted in the next meeting.

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **endorsed**.

**R4-2014592 Draft CR on correcting SSB and RACH configuration in CSI-RS based beam failure detection and link recovery tests**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm CDMA Technologies*

**Abstract:**

The tables for some of FR2 PRACH configurations are not indexed.

The existing sections of CSI-RS based BFD/CBD tests do not mention RACH configurations.

The configured CSI-RS resources in test follow CSI-RS.1.2/CSI-RS.2.2/CSI-RS.3.2 resource configurations. Those CSI-RS resources are QCLed to TCI state 0 (SSB 0) and TCI state 1 (SSB 1). But, SSB config only allows one SSB in the SS burst set (SSB.3 FR1, SSB.1 FR2).

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **postponed**.

**R4-2017162 CR on correcting SSB and RACH configuration in CSI-RS based beam failure detection and link recovery tests**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1405 Cat: A (Rel-16)  
  
 Source: Qualcomm CDMA Technologies*

**Discussion:**

Chair: come back in GTW. Not compliant with 3GPP styles. Cannot be implemented and will be postponed.

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **withdrawn**.

**R4-2014601 CR on TS 38.133 for radio link monitoring test case R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1188 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

In radio link monitor test case, test equipment may check the CSI report from UE to identify whether radio link is failure or not. However, in the test case A.4.5.1.8, A.5.5.1.8, A.6.5.1.8 and A.7.5.1.8, the measure gap pattern is fully overlapped with on duration period of the DRX cycle. Thus, it may cause UE cannot transmit the CSI report to test equipment during duration ON. As a result, we propose a new DRX configuration to guarantee the CSI report can be received by test equipment.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **postponed**.

**R4-2014602 CR on TS 38.133 for radio link monitoring test case R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1189 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **withdrawn**.

**R4-2014865 Correction on beamFailureInstanceMaxCount for test case of availability restriction during FR2 BFR in R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1208 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

The beamFailureInstanceMaxCount = n1 in all other cases but not in 5.5.5.5/7.5.5.5. However, the T2 and T3 in 5.5.5.5/7.5.5.5 are based on the beamFailureInstanceMaxCount = n1, as in 5.5.5.1/7.5.5.1. Therefore the T2/T3 are incorrect.

However, the correct T2/T3 should be long enough to accomdate the 2nd indication and need more testing time. Thus, to save test time, it proposes to align beamFailureInstanceMaxCount with other cases, instead of introduce long T2/T3.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017049**.

**R4-2017049 Correction on beamFailureInstanceMaxCount for test case of availability restriction during FR2 BFR in R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1208 rev 1 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

(Replaces R4-2014865)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014866 Correction on beamFailureInstanceMaxCount for test cases of availability restriction during FR2 BFR in R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1209 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014947 Correction of RRM tests**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1215 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

After V15.03 Table 7.1.2-3 was removed, and a new Table 7.1.2.1-1 with the same content was created. After this modification the RRM tests did not update the reference to the table containing Autonomous Time Adjustment requirements.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2014948 Correction of RRM tests**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1216 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

After V15.03 Table 7.1.2-3 was removed, and a new Table 7.1.2.1-1 with the same content was created. After this modification the RRM tests did not update the reference to the table containing Autonomous Time Adjustment requirements.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015148 Correction of beam assumptions in interfrequency EN-DC FR1+FR2 tests**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1220 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

In some tests UE beam assumption is incorrectly stated for an FR1 PSCell as rough. FR1 cell should not have a beam assumption.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **merged**.

**R4-2015149 Correction of beam assumptions in interfrequency EN-DC FR1+FR2 tests**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1221 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

In some tests UE beam assumption is incorrectly stated for an FR1 PSCell as rough. FR1 cell should not have a beam assumption.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **withdrawn**.

**R4-2015150 Correction of TBD values in EN-DC PSCell addition and release delay test**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1222 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

TBDs remain in PSCell addition and release delay test

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **postponed**.

**R4-2017050 Correction of TBD values in EN-DC PSCell addition and release delay test**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1222 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **withdrawn**.

**R4-2015151 Correction of TBD values in EN-DC PSCell addition and release delay test**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1223 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Correcting TBDs which remain in PSCell addition and release delay test

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **withdrawn**.

**R4-2015152 Correction to types of requirements in annex A**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1224 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

R4-2013035 (CR 1112) removed a sentence “In RRC\_IDLE state mobility (clause A.4.x, A.5.x, A.6.x and A.7.x) there is cell re-selection delay”. The purpose of this CR was to replace all .x references with the proper section numbering. It was stated on the cover page of R4-2013035 that “Test cases for cell re-selection delays are not defined so the statement is deleted.”. It is true that there are no reselection tests for EN-DC (A.4.x and A.5.x) however reselection delay tests and test requirements exist for SA NR and should be described in section A.2.1.1 to avoid a mistunderstanding that only RRC connected and RRC connection control delays are tested

Also the example given later in the text of section A.2.1.1 All have in common that the UE is required to perform an action observable in higher layers (e.g. camp on the correct cell) within a certain time after a specific event (e.g. when a new strong pilot or reference signal appears).” is explicitly an idle mode reselection example, so it is better not to delete this sentence

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015153 Correction to types of requirements in annex A**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1225 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

R4-2013035 (CR 1112) removed a sentence “ In RRC\_IDLE state mobility (clause A.4.x, A.5.x, A.6.x and A.7.x) there is cell re-selection delay”. The purpose of this CR was to replace all .x references with the proper section numbering. It was stated on the

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015154 Corrections to frequency range in interfrequency measurement procedures tests**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1226 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Some EN-DC FR2 interfrequency measurement procedure testcases incorrectly state that two FR1 cells are used. Depending on case, either 2 FR2 cells are used, or one FR1 and one FR2 cell are used.

**Discussion:**

The secretary commented that the CR coversheet is missing 'Reason for change', 'Summary of change and Consequences if not approved' fields. The CR coversheet should be written by using the CR template. See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017051**.

**R4-2017051 Corrections to frequency range in interfrequency measurement procedures tests**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1226 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2015154)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015155 Corrections to frequency range in interfrequency measurement procedures tests**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1227 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Some EN-DC FR2 interfrequency measurement procedure testcases incorrectly state that two FR1 cells are used. Depending on case, either 2 FR2 cells are used, or one FR1 and one FR2 cell are used.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015157 Correction on TBD values in FR1+FR2 interfrequency RSRP accuracy tests**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1229 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

All OTA parameters and levels in interfrequency RSRP accuracy tests for the FR2 cell are TBD

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015158 Correction on TBD values in FR1+FR2 interfrequency RSRP accuracy tests**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1230 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Interfrequency OTA test cases still have TBDs for some cell specific parameters. CR proposes values for TBDs

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015161 Correction of TBD value in Radio Link Monitoring Out-of-sync Tests for FR2 configured with CSI-RS-based RLM**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1233 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Replace TBD Noc in OTA CSI-RS test cases for RLM OOS with proposed values

**Discussion:**

The secretary commented that the CR coversheet is missing 'Reason for change', 'Summary of change and Consequences if not approved' fields. The CR coversheet should be written by using the CR template. See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **merged**.

**R4-2015162 Correction of TBD value in Radio Link Monitoring Out-of-sync Tests for FR2 configured with CSI-RS-based RLM**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1234 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Replace TBD Noc in OTA CSI-RS test cases for RLM OOS with proposed values

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **withdrawn**.

**R4-2015163 Square bracket removal in 38.133 section A.1 to A.5**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1235 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Square bracket values in specifications should be confirmed

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017052**.

**R4-2017052 Square bracket removal in 38.133 section A.1 to A.5**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1235 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2015163)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015164 Square bracket removal in 38.133 section A.1 to A.5**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1236 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Removal of square brackets

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015165 Square bracket removal in 38.133 section A.6 to A.8**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1237 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Removal of square brackets

**Discussion:**

The secretary commented that the CR coversheet is missing 'Reason for change', 'Summary of change and Consequences if not approved' fields. The CR coversheet should be written by using the CR template. If neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017163**.

**R4-2017163 Square bracket removal in 38.133 section A.6 to A.8**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1237 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2015165)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015166 Square bracket removal in 38.133 section A.6 to A.8**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1238 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Removal of square brackets

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015447 Correction to CSI-RS RMC configuration R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1258 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

CSI-RS of density 3 is used in CSI-RS RMC configuration CSI-RS.X.2/3/4 TDD and CSI-RS.X.2/3/4 FDD. So the length of bitmap configured in frequencyDomainAllocation can only be 4 according to 38.211 Table 7.4.1.5.3-1. It is unable to set frequencyDomainAllocation = 000001.

We purpose to change frequencyDomainAllocation = 0001 for CSI-RS.X.2/3/4.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017043**.

**R4-2017043 Correction to CSI-RS RMC configuration R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1258 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015447)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015448 Correction to CSI-RS RMC configuration R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1259 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015449 Correction to cell reselection test cases R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1260 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

1. Cell power level settings in intra-frequency reselection TCs don't take measurement restriction rule into account. For example, In 6.1.1.1.UE is supposed to reselect to better ranked neighbour cell. However, S-value for UE's serving cell = RSRP measurement value(-85 dBm) - Qrxlevmin(-140dBm) - QrxlevminOffset (0dB) -Pcompensation (0dB) - Qoffsettemp (0dB) = 55 dB > intraSearchP(50dB). As a result, UE may choose not to perform intra-frequency measurement according to 38.304. Then it will fail the test.

So we propose to change Qrxlevmin to ensure: S value of serving cell < intraSearchP - margin.

2. intraSearchP and non-intraSearchP are mandatory fields in NR according to 38.331. They can't be set to "not sent".

3. Qhysts and Qoffsets, n in Table A.6.1.1.2.2-3 are redundant since A.6.1.1.2 isn't a rank-based cell reselection TC.

4. Cell power setting in A.7.1.1.2 doesn't take 7.5dB margin into account.

5. Comments of initial condition in A.8.2.1.1 is wrong. It should be "UE camps on Cell 2" rather than "UE camps on Cell 1", Otherwise TC can't be looped.

6. Io calculation in A.8.2.1.1 is wrong.

7. Typos.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017053**.

**R4-2017053 Correction to cell reselection test cases R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1260 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015449)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015450 Correction to cell reselection test cases R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1261 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015451 Correction to inter-RAT handover test cases R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1262 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

1. B2 thresholds used in A.8.3.1.1 don't leave enough margin for absolute accuracy.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017054**.

**R4-2017054 Correction to inter-RAT handover test cases R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1262 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015451)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015452 Correction to inter-RAT handover test cases R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1263 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015453 Correction to NR measurement under LTE SA test cases R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1264 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

LTE serving cell is wrongly powered off in T1.

Fading channel is used as propagation condition in TCs. However, no margin are reserved for channel fading. As a result, measurement reporting may not be correctly triggered. According analysis in RAN5 2dB margin are needed as depicted below:

Io calculation is wrong.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017055**.

**R4-2017055 Correction to NR measurement under LTE SA test cases R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1264 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015453)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015454 Correction to NR measurement under LTE SA test cases R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1265 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015455 Correction to inter-RAT SFTD measurement test cases R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1266 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

To correct wrong Io calculations

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017056**.

**R4-2017056 Correction to inter-RAT SFTD measurement test cases R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1266 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015455)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015456 Correction to inter-RAT SFTD measurement test cases R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1267 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015457 CR on maintaining antenna configurations in TS38.133**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1268 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

According to the agreements in [RF-172788], UE equiped with 4 Rx ports is allowed to fall back to 2Rx for the purpose of power saving, which means that UE equiped with 4Rx ports supports using both 2Rx and 4Rx for these bands. For the tests specified in clause A.4.7 or A.6.7, based on the current description in A.3.6.1, the UE equiped with 4 Rx needs to be tested using both 2Rx and 4Rx. However, the UE shall be required to be tested using one of them.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **not pursued**.

**R4-2015458 CR on maintaining Antenna configurations in TS38.133 R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1269 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **withdrawn**.

**R4-2015459 CR on maintaining BFD/CBD measurements test cases R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1270 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For BFD and link recovery tests in FR2, the SNR and RSRP values of q1 are still TBD.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015460 CR on maintaining BFD/CBD measurements test cases in TS38.133 R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1271 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015503 Correction on SA inter-RAT measurement FR1 test case**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1282 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The values for Ês/Noc, SS-RSRP and Io are not correct in SA inter-RAT measurement FR1 test case.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015531 CR on RRC-based active TCI state switch test case Rel-15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1297 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In the RRC-based active TCI state switch test cases, UE is configured to perform L1-RSRP within T2 of the target TCI state, and then the requirements for known case is tested. However, the test configuration for L1-RSRP is not provided and the T2 period configuration is not correct.

There is error is the test procedure that at the beginning of T2, the SSB corresponding to TCI-state1 should starts transmitting instead of TCI-state 0 in the current spec.

There is no need to configure Cell2 in A.7.5.8.2 which is for EN-DC

There are some typos need to be fixed.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017057**.

**R4-2017057 CR on RRC-based active TCI state switch test case Rel-15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1297 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015531)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015532 CR on RRC-based active TCI state switch test case Rel-16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1298 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015674 [CR] NR Perf Maintenance R15 Cat F**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1312 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

The following errors exist in the current test cases which mislead readers:

- In multiple tables, such as Table A.6.6.4.1.2-1, the Note shall be for Cell 1 not both cells.

- In clause A.7.5.8.1.1.1 and A.7.5.8.2.1.1, the configuration mentioned a second cell in EN-DC. However, the test is for NR SA and only one cell is configured.

- In Table A.7.6.2.1.1-3, the configurations should be for Cell 1 and Cell 2, separately.

- In Clause A.7.5.3.2.2, [TBD] exists.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017058**.

**R4-2017058 [CR] NR Perf Maintenance R15 Cat F**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1312 rev 1 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

(Replaces R4-2015674)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2017379 [CR] NR Perf Maintenance R16 Cat A**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1413 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Decision:** The document was **agreed**.

**R4-2015738 CR on FR2 unkown SCell activation test cases R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1318 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The current test case for FR2 unknown SCell activation are incomplete.

The test procedure related to L1-RSRP reporting, TCI activation and CSI-RS for CSI configuration are missing, which makes the test impossible to be implemented.

The test requirements are missing, e.g. when UE is expected to report valid L1-RSRP and CSI.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015739 CR on FR2 unkown SCell activation test cases R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1319 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015740 CR on BWP in L1-RSRP delay and accuracy test cases R15**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1320 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In current test case for FR2 CSI-RS based L1-RSRP delay, the BWP configuration is DLBWP.1.3, which is 32 RB. However, the CSI-RS based L1-RSRP measurement requirements are defined based on 48 RB.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015741 CR on BWP in L1-RSRP delay and accuracy test cases R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1321 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015823 CR: Correction of CFRA test in FR2 SA**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1333 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The number of preamble receptions by TE to transmit RAR is missing.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015993 CR to TS 38.133: Corrections to inter-RAT FR1 test cases (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1341 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Abstract:**

TC A.6.7.6.1 (Table A.6.7.6.1.2-2)

There are two sets of Es/Noc, RSRP and SSB\_RP parameters for the configuration of the NR Cell. However, there is no reference to different subtests and no clear indication when to use the second set of parameters. Furthermore, the NR Cell is just the serving cell in these tests, the target cell is the E-UTRA cell.

Row RSRQ is wrongly named, since the value is in dBm/SCS, and RSRQ is a quantity in dB.

TC A.6.7.7.1 (Table A.6.7.7.1.2-3)

The CRS Es/Noc for Test 2 is incorrect.

The Noc values for subcarriers with and without CRS are different. The RS-SINR, according to the definition in TS 36.214, is measured only in the CRS subcarriers. The configuration of the Noc in the non-CRS subcarriers should not influence the RS-SINR according to the measurement definition. In addition subcarrier specific Noc greatly complicates the test case implementation in RAN5 unnecessarily.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017059**.

**R4-2017059 CR to TS 38.133: Corrections to inter-RAT FR1 test cases (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1341 rev 1 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

(Replaces R4-2015993)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015994 CR to TS 38.133: Corrections to inter-RAT FR1 test cases (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1342 Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015995 CR to TS 38.133: Corrections to inter-RAT FR2 test cases (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1343 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Abstract:**

In TCs for FR2 inter-RAT measurement accurycy there are several inconsistencies:

SSB Configuration is missing.

UE beam assumption is missing.

OTA parameters (Noc, Es, Es/Noc) not given explicitely in the table, but through Notes, which are also not consistent since they refer to spherical coverage and do not account for 1dB band relaxation or UE internal noice when close to Refsens .

Bandgroups are redundant since test parameters are defined band agnostic.

Redundant / missleading table Notes.

Relative accuracy mentioned in the test purpose, though only one cell is measured in the test.

Editorial inconsistencies

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017060**.

**R4-2017060 CR to TS 38.133: Corrections to inter-RAT FR2 test cases (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1343 rev 1 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

(Replaces R4-2015995)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2015996 CR to TS 38.133: Corrections to inter-RAT FR2 test cases (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1344 Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2016024 CR 38.133 Corrections to test cases for TCI state switching**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1349 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Stray references to a non-existing cell 2. The test cases are based on single cell, but parameters for a second cell, timing offset between Cell2 and Cell1, are provided in the tables for general test parameters. Moreover, despite being based on only a single cell, the NR cell specific test parameter tables mention that "OCNG shall be used suchs that both cells [...]". This causes confusion. This CR removes the incorrect references to a second cell.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2016025 CR 38.133 Correction to test case for TCI state switching (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1350 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The test cases are based on single cell, but parameters for a second cell, timing offset between Cell2 and Cell1, are provided in the table for general test parameters. Moreover, despite being based on only a single cell, the NR cell specific test paramet

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2016160 Removal of annex B.2.6 on one shot timing adjustment in 38.133**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1363 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

To annex B.2.6 containing side conditiions for one shot timing adjustment requirements.

**Discussion:**

The secretary wondered what is the correct Specification? It reads 36.133 on the coversheet but the CR is allocated for 38.133. See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017061**.

**R4-2017061 Removal of annex B.2.6 on one shot timing adjustment in 38.133**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1363 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2016160)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2016161 Removal of annex B.2.6 on one shot timing adjustment in 38.133**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1364 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The side conditions are related to one shot timing adjustment, which was removed. The annex is no more applicable and is removed.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2016163 Correction to NR FR1 DL active BWP switch of Cell with non-DRX in SA (A.6.5.6.2.1)**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1365 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

To correct parameters in in the test case NR FR1 DL active BWP switch of Cell with non-DRX in SA

**Discussion:**

Chair: The CR status was changed to Not concluded (instead of proposed Agreed in the summary document). R4-2016164 is the Rel-16 Cat F CR. It seems that the changes in Rel-15 and Rel-16 CRs are not aligned and further clarifications are needed. At least the titles of Table A.6.5.6.2.1.1-1 in Rel-15 and Rel-16 are different.

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **revised to R4-2017309**.

**R4-2017309 Correction to NR FR1 DL active BWP switch of Cell with non-DRX in SA (A.6.5.6.2.1)**

*Type: CR For: Agreement  
 38.133 v15.11.0 CR-1365 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2016163)

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2016164 Correction to NR FR1 DL active BWP switch of Cell with non-DRX in SA (A.6.5.6.2.1)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1366 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

To correct parameters in in the test case NR FR1 DL active BWP switch of Cell with non-DRX in SA

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **agreed**.

**R4-2016582 Missing TRS Configurations in Test Cases**

*Type: discussion For: Agreement  
 38.133 v..  
 Source: Qualcomm Incorporated*

**Abstract:**

Proposal 1: In principle, RAN4 agrees that TRS configuration should be added to the following test cases. And the correction for each test case will be made by one big CR.

**Discussion:**

See email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf in R4-2017001.

**Decision:** The document was **noted**.

### 4.9 Demodulation and CSI requirements maintenance (38.101-4/38.104) [NR\_newRAT-Perf]

**R4-2017412 Email discussion summary for [97e][314] NR\_Demod\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Intel)*

**Discussion:**

The contribution summarized email discussion thread [97e][314] NR\_Demod\_Maintenance. The email thread was moderated by Dmitry Belov (Intel Corporation SAS) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017605**.

**R4-2017605 Email discussion summary for [97e][314] NR\_Demod\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Intel)*

(Replaces R4-2017412)

**Discussion:**

The contribution summarized email discussion thread [97e][314] NR\_Demod\_Maintenance. The email thread was moderated by Dmitry Belov (Intel Corporation SAS) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

#### 4.9.1 UE demodulation requirements [NR\_newRAT-Perf]

**R4-2014015 Update of Noc for NR operating bands in FR2**

*Type: CR For: Agreement  
 38.101-4 v15.7.0 CR-0079 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

The Rel-15 FR2 multi-band requirement framework was updated in R4-2006352, and introduces a maximum cap to the per-band relaxation factors. Clause 4.5.3 needs to be aligned to these changes.

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **agreed**.

**R4-2014016 Update of Noc for NR operating bands in FR2**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0080 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **agreed**.

**R4-2015824 CR: Correction of FRC for PDSCH demodulation requirements**

*Type: CR For: Agreement  
 38.101-4 v15.7.0 CR-0106 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Information bit payload in PDSCH Reference Channel for 64QAM in slots where TRS is trasmittted is not correct.

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **not pursued**.

**R4-2017447 CR: Correction of FRC for PDSCH demodulation requirements**

*Type: CR For: Agreement  
 38.101-4 v15.7.0 CR-0106 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **withdrawn**.

**R4-2015825 CR: Correction of FRC for PDSCH demodulation requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0107 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

This CR corrects the FRC for PDSCH demodulation requirements

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **withdrawn**.

**R4-2016424 CR: Updates to OCNG pattern reference**

*Type: CR For: Agreement  
 38.101-4 v15.7.0 CR-0116 Cat: F (Rel-15)  
  
 Source: Huawei Technologies Sweden AB*

**Abstract:**

OCNG FDD pattern 1 and OCNG TDD pattern 2 are defined in Annex A.5, but ‘OCNG’ is wrongly configured for “Symbols for all unused REs” in the test parameters instead of OCNG pattern, it is easy to create confusion for testing.

**Discussion:**

The secretary commented that (on the coversheet) the version should read 15.7.0 instead of 15.07.0. See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **revised to R4-2017448**.

**R4-2017448 CR: Updates to OCNG pattern reference**

*Type: CR For: Agreement  
 38.101-4 v15.7.0 CR-0116 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei Technologies Sweden AB*

(Replaces R4-2016424)

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **agreed**.

**R4-2016425 CR: Updates OCNG pattern reference (Rel-16)**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0117 Cat: A (Rel-16)  
  
 Source: Huawei Technologies Sweden AB*

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **agreed**.

**R4-2016448 CR: Correction on OCNG pattern**

*Type: CR For: Agreement  
 38.101-4 v15.7.0 CR-0118 Cat: F (Rel-15)  
  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **revised to R4-2017449**.

**R4-2017449 CR: Correction on OCNG pattern**

*Type: CR For: Agreement  
 38.101-4 v15.7.0 CR-0118 rev 1 Cat: F (Rel-15)  
  
 Source: Qualcomm, Inc.*

(Replaces R4-2016448)

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **agreed**.

**R4-2016449 CR: Correction on OCNG pattern**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0119 Cat: A (Rel-16)  
  
 Source: Qualcomm, Inc.*

**Abstract:**

When data is not FDMed with DMRS, RAN1 spec requires power boosting on PDSCH DMRS to keep the same power across symbols. If OCNG is padded into the empty REs on PDSCH DMRS symbols, power across data and PDSCH DMRS symbols are different. Text is added to clarify that OCNG pattern is not applied to PDSCH DMRS symbols to avoid this power difference across symbols.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **revised to R4-2017450**.

**R4-2017450 CR: Correction on OCNG pattern**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0119 rev 1 Cat: A (Rel-16)  
  
 Source: Qualcomm, Inc.*

(Replaces R4-2016449)

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **agreed**.

#### 4.9.2 CSI requirements [NR\_newRAT-Perf]

**R4-2014050 Correction to FR1 Aperiodic CSI Reporting**

*Type: CR For: Agreement  
 38.101-4 v15.7.0 CR-0081 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

Incorrect Aperiodic Report Slot Offset. Current values will NOT schedule Aperiodic CSI Reports in an UL slot.

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **agreed**.

**R4-2014051 Correction to FR1 Aperiodic CSI Reporting**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0082 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

Change Aperiodic Report Slot Offset value from 9 to 8

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **agreed**.

**R4-2014052 Correction to FR2 PMI Aperiodic CSI Reporting**

*Type: CR For: Agreement  
 38.101-4 v15.7.0 CR-0083 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

Incorrect Aperiodic Report Slot Offset. Current values will NOT schedule Aperiodic CSI Reports in an UL slot.

Test 1:

Test 2:

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **agreed**.

**R4-2014053 Correction to FR2 PMI Aperiodic CSI Reporting**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0084 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

Correct Aperiodic Report Slot Offset values for Test 1 and Test 2:

Test 1: change 7 to 6, Test 2: change 9 to 8

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **agreed**.

#### 4.9.3 BS demodulation requirements [NR\_newRAT-Perf]

**R4-2014494 CR for 38.141-2: Add error-free feedback in demodulation requirement test setup**

*Type: CR For: Agreement  
 38.141-2 v15.7.0 CR-0229 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

OTA test setup section is missing the error-free feedback link.

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **agreed**.

**R4-2014509 CR for 38.141-2: Add error-free feedback in demodulation requirement test setup**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0230 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Added note in PUSCH minimum performance requirement OTA test setup, following the text agreed in TR 37.941 (section 15.3) on HARQ feedback, to allow HARQ feedback on an error-free feedback link in OTA testing.

Note adapted from TS 38.141-1.

**Discussion:**

See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **agreed**.

**R4-2015843 Adding MCS12 and 30% throughput requirements and corresponding FRC tables for FR2 PUSCH performance in TS38.104 v15.11.0**

*Type: CR For: Agreement  
 38.104 v15.11.0 CR-0256 Cat: B (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Rel-16 has added MCS12 and 30% throghput requirements for 2-O PUSCH performance which previous target SNR values are very close or over 20dB test limit. Rel-15 should align these requirements with Rel-16 to let these cases testable.

**Discussion:**

The secretary commented that the CR number 0256 is missing on the coversheet. See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **not pursued**.

**R4-2015844 Adding MCS12 and 30% throughput requirements and corresponding FRC tables for FR2 PUSCH performance in TS38.141-2 v15.7.0**

*Type: CR For: Agreement  
 38.141-2 v15.7.0 CR-0244 Cat: B (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Rel-16 has added MCS12 and 30% throghput requirements for 2-O PUSCH performance which previous target SNR values are very close or over 20dB test limit. Rel-15 should align these requirements with Rel-16 to let these cases testable.

**Discussion:**

The secretary commented that the CR number 0244 is missing on the coversheet. See email discussion summary for [97e][314] NR\_Demod\_Maintenance in R4-2017412.

**Decision:** The document was **not pursued**.

### 4.10 Positioning specs maintenance (36.171, 37.171 and 38.171) [NR\_newRAT-Perf or TEI]

### 4.11 Testability Maintenance (38.810) [FS\_NR\_test\_methods]

## 5 LTE maintenance (up to Rel15) [WI code or TEI]

### 5.1 BS RF requirements [WI code or TEI]

**R4-2017399 Email discussion summary for [97e][301] LTE\_BSRF\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][301] LTE\_BSRF\_Maintenance. The email thread was moderated by Chunhui Zhang (Ericsson) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017606**.

**R4-2017606 Email discussion summary for [97e][301] LTE\_BSRF\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2017399)

**Discussion:**

The contribution summarized email discussion thread [96e][301] LTE\_maintenance\_RF\_BS. The email thread was moderated by Chunhui Zhang (Ericsson) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2014469 CR to TS 36.141: Clarification on manufacturer**

*Type: CR For: Agreement  
 36.141 v13.14.0 CR-1276 Cat: F (Rel-13)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

It is not clear whether the manufacturer’s declaration on ‘the number of supported NB-IoT carriers’ applies to NB-IoT in-band or guard band operation only, or also applies to NB-IoT standalone operation. For TS 37.141, it was agreed in R4#96-e (R4-2012573) to keep the existing manufacturer’s declaration on ‘the number of supported PRBs’ for NB-IoT in-band or guard band operation, and add the manufacturer’s declaration on ‘the number of supported NB-IoT carriers’ for NB-IoT standalone operation.

**Discussion:**

See email discussion summary for [97e][301] LTE\_BSRF\_Maintenance in R4-2017399.

**Decision:** The document was **agreed**.

**R4-2014470 CR to TS 36.141: Clarification on manufacturer**

*Type: CR For: Agreement  
 36.141 v14.11.0 CR-1277 Cat: A (Rel-14)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Change the existing manufacturer’s declaration to ‘the number of supported PRBs’ for NB-IoT in-band or guard band operation and add the manufacturer’s declaration on ‘the number of supported NB-IoT carriers’ for NB-IoT standalone operation.

**Discussion:**

See email discussion summary for [97e][301] LTE\_BSRF\_Maintenance in R4-2017399.

**Decision:** The document was **agreed**.

**R4-2014471 CR to TS 36.141: Clarification on manufacturer**

*Type: CR For: Agreement  
 36.141 v15.10.0 CR-1278 Cat: A (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Change the existing manufacturer’s declaration to ‘the number of supported PRBs’ for NB-IoT in-band or guard band operation and add the manufacturer’s declaration on ‘the number of supported NB-IoT carriers’ for NB-IoT standalone operation.

**Discussion:**

See email discussion summary for [97e][301] LTE\_BSRF\_Maintenance in R4-2017399.

**Decision:** The document was **agreed**.

**R4-2014472 CR to TS 36.141: Clarification on manufacturer**

*Type: CR For: Agreement  
 36.141 v16.7.0 CR-1279 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Change the existing manufacturer’s declaration to ‘the number of supported PRBs’ for NB-IoT in-band or guard band operation and add the manufacturer’s declaration on ‘the number of supported NB-IoT carriers’ for NB-IoT standalone operation.

**Discussion:**

See email discussion summary for [97e][301] LTE\_BSRF\_Maintenance in R4-2017399.

**Decision:** The document was **agreed**.

**R4-2015375 Further discussion on additional optional EDT level for test**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution, we further discuss issue of additional optional energy detection threshold in conformance tests for LAA/eLAA.

Observation: Changes of EDT threshold by adding additional optional value that is declared by BS vendor would not relax EDT requirements, but only would allow to use specific regulatory requirements for EDT test.

Proposal: It is proposed to introduce changes for EDT level in TS 37.107 by adding alternative option 1 from WF that is declared by BS vendor and introduce it from Rel-15 onwards.

**Discussion:**

See email discussion summary for [97e][301] LTE\_BSRF\_Maintenance in R4-2017399.

**Decision:** The document was **noted**.

**R4-2015376 CR to 37.107 with update of EDT level**

*Type: CR For: Agreement  
 37.107 v15.3.0 CR-0008 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces update for interfering signal of energy detection accuracy (EDT) to align with RAN1 specification TS 37.213. Details of this changes are described in [1].

[1] R4-2015375, Further discussion on additional optional EDT level for test, Nokia, Nokia Shaghai Bell.

**Discussion:**

See email discussion summary for [97e][301] LTE\_BSRF\_Maintenance in R4-2017399.

**Decision:** The document was **revised to R4-2017451**.

**R4-2017451 CR to 37.107 with update of EDT level**

*Type: CR For: Agreement  
 37.107 v15.3.0 CR-0008 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015376)

**Discussion:**

See email discussion summary for [97e][301] LTE\_BSRF\_Maintenance in R4-2017399.

**Decision:** The document was **agreed**.

**R4-2015377 CR to 37.107 with update of EDT level**

*Type: CR For: Agreement  
 37.107 v16.1.0 CR-0009 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces update for interfering signal of energy detection accuracy (EDT) to align with RAN1 specification TS 37.213.

**Discussion:**

See email discussion summary for [97e][301] LTE\_BSRF\_Maintenance in R4-2017399.

**Decision:** The document was **agreed**.

### 5.2 UE RF requirements [WI code or TEI]

**R4-2016607 Email discussion summary for [97e][105] LTE\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Skyworks)*

**Discussion:**

The contribution summarized email discussion thread [97e][105] LTE\_Maintenance. The email thread was moderated by Dominique Brunel (Skyworks Solutions Inc.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016949**.

**R4-2016949 Email discussion summary for [97e][105] LTE\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Skyworks)*

(Replaces R4-2016607)

**Discussion:**

The contribution summarized email discussion thread [97e][105] LTE\_Maintenance. The email thread was moderated by Dominique Brunel (Skyworks Solutions Inc.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2014311 Clarifications and corrections on UE co-ex requirements(R15)**

*Type: CR For: Agreement  
 36.101 v15.12.0 CR-5681 Cat: F (Rel-15)  
  
 Source: SoftBank Corp.*

**Abstract:**

UE co-ex table for 2-bands CA(Table 6.6.3.2A-0) includes additional requirements (A-MPR required) and errors remain in UE co-ex tables.

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **revised to R4-2017830**.

**R4-2017830 Clarifications and corrections on UE co-ex requirements(R15)**

*Type: CR For: Agreement  
 36.101 v15.12.0 CR-5681 rev 1 Cat: F (Rel-15)  
  
 Source: SoftBank Corp.*

(Replaces R4-2014311)

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

**R4-2014312 Clarifications and corrections on UE co-ex requirements(R16)**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5682 Cat: A (Rel-16)  
  
 Source: SoftBank Corp.*

**Abstract:**

UE co-ex table for 2-bands CA(Table 6.6.3.2A-0) includes additional requirements (A-MPR required) and errors remain in UE co-ex tables.

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **revised to R4-2017831**.

**R4-2017831 Clarifications and corrections on UE co-ex requirements(R16)**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5682 rev 1 Cat: A (Rel-16)  
  
 Source: SoftBank Corp.*

(Replaces R4-2014312)

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

**R4-2014896 Coexistence cleanup for 36101 Rel15**

*Type: CR For: Agreement  
 36.101 v15.12.0 CR-5685 Cat: F (Rel-15)  
  
 Source: Apple Inc.*

**Abstract:**

Rel-15 features several band protections which are not technical possible due to sometimes TDD bands with overlapping regions are protected or similar issues. The CR focuses on correcting false protections so that a UE will not face technical impossible emission requirements.

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

**R4-2015549 CR for 36.101 to clarify the SCS supports for LTE MBMS (Rel-14)**

*Type: CR For: Agreement  
 36.101 v14.16.0 CR-5688 Cat: F (Rel-14)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Based on the agreement in R4-2012604, UE doesn’t have to support all of the SCS, if UE support LTE MBMS.

For MBMS feature, there is no need to meet the minimum requirements of transmitter characteristics for UE.

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **revised to R4-2016796**.

**R4-2016796 CR for 36.101 to clarify the SCS supports for LTE MBMS (Rel-14)**

*Type: CR For: Agreement  
 36.101 v14.16.0 CR-5688 rev 1 Cat: F (Rel-14)  
  
 Source: Huawei, HiSilicon, ZTE*

(Replaces R4-2015549)

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

**R4-2015550 CR for 36.101 to clarify the SCS supports for LTE MBMS (Rel-15)**

*Type: CR For: Agreement  
 36.101 v15.12.0 CR-5689 Cat: A (Rel-15)  
  
 Source: Huawei, HiSilicon, ZTE*

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

**R4-2015551 CR for 36.101 to clarify the SCS supports for LTE MBMS (Rel-16)**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5690 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon, ZTE*

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

**R4-2015807 Test frequencies for NB-IOT UE in standalone operation**

*Type: other For: Discussion  
 Source: Sony*

**Abstract:**

Observation 1: TS 36.104 test conditions (test frequencies) for both stand-alone and guard-band NB-IoT operation may conflict with FCC band-edge spectrum emission requirements.

Observation 2: 100 kHz offset for NB-IoT network deployments may solve the violation of the FCC regulation.

Proposal 1: Send an LS to RAN5 with proposal to exclude the first and last EARFCNs in TS 36.104 test frequencies for both stand-alone and guard-band IoT operation modes for all frequency bands were FCC regulation applies.

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **noted**.

**R4-2016035 CR Correction to B72 coex - CA\_NS\_08 - Band 10 protection 36.101 Rel15**

*Type: CR For: Agreement  
 36.101 v15.12.0 CR-5702 Cat: F (Rel-15)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Three combined CR according to meeting guidelines:

- Restore Band 72 list of protected bands, ie B72 and B31,

- Band 10 protection removal has been agreed in R4-2011521. This CR applies this correction to Release 15,

- Allow CA A-MPR for inner region CA\_NS\_08 allocations

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **revised to R4-2016996**.

**R4-2016996 CR Correction to B72 coex - CA\_NS\_08 - Band 10 protection 36.101 Rel15**

*Type: CR For: Agreement  
 36.101 v15.12.0 CR-5702 rev 1 Cat: F (Rel-15)  
  
 Source: Skyworks Solutions Inc.*

(Replaces R4-2016035)

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

### 5.3 RRM requirements [WI code or TEI]

**R4-2017002 Email discussion summary for [97e][203] LTE\_RRM\_maintenance**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][203] LTE\_RRM\_maintenance. The email thread was moderated by Chris Callender (Ericsson) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017273**.

**R4-2017273 Email discussion summary for [97e][203] LTE\_RRM\_maintenance**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2017002)

**Discussion:**

The contribution summarized email discussion thread [97e][203] LTE\_RRM\_maintenance. The email thread was moderated by Chris Callender (Ericsson) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

**R4-2015461 CR on maintaining V2X test cases in TS36.133 R14**

*Type: CR For: Agreement  
 36.133 v14.16.0 CR-6965 Cat: F (Rel-14)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In V2X synchronization reference Selection/Reselection tests, there are some errors in refering section number. In congestion control test, the value of PSSCH-RSRP is not correct.

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **revised to R4-2017063**.

**R4-2017063 CR on maintaining V2X test cases in TS36.133 R14**

*Type: CR For: Agreement  
 36.133 v14.16.0 CR-6965 rev 1 Cat: F (Rel-14)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015461)

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **agreed**.

**R4-2015462 CR on maintaining V2X test cases in TS36.133 R15**

*Type: CR For: Agreement  
 36.133 v15.11.0 CR-6966 Cat: A (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **agreed**.

**R4-2015463 CR on maintaining V2X test cases in TS36.133 R16**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6967 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **agreed**.

**R4-2015838 CR: Correction of eMTC early-OOS/early-IS tests (Rel-14)**

*Type: CR For: Agreement  
 36.133 v14.16.0 CR-6981 Cat: F (Rel-14)  
  
 Source: Ericsson*

**Abstract:**

Correction of eMTC early-OOS/early-IS tests

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **revised to R4-2017064**.

**R4-2017064 CR: Correction of eMTC early-OOS/early-IS tests (Rel-14)**

*Type: CR For: Agreement  
 36.133 v14.16.0 CR-6981 rev 1 Cat: F (Rel-14)  
  
 Source: Ericsson*

(Replaces R4-2015838)

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **postponed**.

**R4-2015839 CR: Correction of eMTC early-OOS/early-IS tests**

*Type: CR For: Agreement  
 36.133 v15.11.0 CR-6982 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Correction of eMTC early-OOS/early-IS tests

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **revised to R4-2017065**.

**R4-2017065 CR: Correction of eMTC early-OOS/early-IS tests**

*Type: CR For: Agreement  
 36.133 v15.11.0 CR-6982 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2015839)

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **postponed**.

**R4-2015840 CR: Correction of eMTC early-OOS/early-IS tests**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6983 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

This CR corrects TBD and removes [] from Rel-14 eMTC early-OOS/early-IS tests.

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **withdrawn**.

**R4-2016012 CR 36.133 Corrections to test cases for SCell Hibernation**

*Type: CR For: Agreement  
 36.133 v15.11.0 CR-6986 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

References to tables for test case parameters are incorrect and pointing at tables for another test case.

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **agreed**.

**R4-2016013 CR 36.133 Correction to test cases for SCell Hibernation (Rel-16)**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6987 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Correction of references that currently are incorrect and pointing at tables for another test case.

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **agreed**.

**R4-2016548 Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA**

*Type: CR For: Agreement  
 36.133 v13.20.0 CR-7002 Cat: F (Rel-13)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Correct inconsistency of Es/Iot requirement for target cell in RSRP intra-frequecy tests for UE Cat M1 in CE ModeA vs UE Cat 1bis. For intra-frequency cell re-selection, the Es/Iot condition for UE Cat 1bis specified in TS 36.133 Table B.1.6-1 is Es/Iot ≥ -5 dB. In contrast, the equivalent requirement for UE Cat M1 is specified in TS 36.133 Table B.1.3-1 as Es/Iot ≥ -6 dB. Since both UE Cat M1 and Cat 1bis feature 1 Rx the two requirements should be reconciled.

In addition, we have added cell 2 timing offset information for consistency with other similar tests.

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **revised to R4-2017066**.

**R4-2017066 Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA**

*Type: CR For: Agreement  
 36.133 v13.20.0 CR-7002 rev 1 Cat: F (Rel-13)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2016548)

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **agreed**.

**R4-2016549 Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA**

*Type: CR For: Agreement  
 36.133 v14.16.0 CR-7003 Cat: A (Rel-14)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Correct inconsistency of Es/Iot requirement for target cell in RSRP intra-frequecy tests for UE Cat M1 in CE ModeA vs UE Cat 1bis.

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **agreed**.

**R4-2016550 Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA**

*Type: CR For: Agreement  
 36.133 v15.11.0 CR-7004 Cat: A (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Correct inconsistency of Es/Iot requirement for target cell in RSRP intra-frequecy tests for UE Cat M1 in CE ModeA vs UE Cat 1bis.

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **agreed**.

**R4-2016551 Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-7005 Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Correct inconsistency of Es/Iot requirement for target cell in RSRP intra-frequecy tests for UE Cat M1 in CE ModeA vs UE Cat 1bis.

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **agreed**.

### 5.4 Demodulation and CSI requirements [WI code or TEI]

#### 5.4.1 UE demodulation and CSI requirements [WI code or TEI]

**R4-2017411 Email discussion summary for [97e][313] LTE\_Demod\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][313] LTE\_Demod\_Maintenance. The email thread was moderated by Tricia Li (Huawei) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017607**.

**R4-2017607 Email discussion summary for [97e][313] LTE\_Demod\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2017411)

**Discussion:**

The contribution summarized email discussion thread [97e][313] LTE\_Demod\_Maintenance. The email thread was moderated by Tricia Li (Huawei) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2015589 CR on cleanup for LTE FeMBMS(Rel-14)**

*Type: CR For: Agreement  
 36.101 v14.16.0 CR-5691 Cat: F (Rel-14)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Remove square brackets in LTE FeMBMS performance requirements.

**Discussion:**

The secretary commented that the CR number 5691 is missing on the coversheet. See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **revised to R4-2017452**.

**R4-2017452 CR on cleanup for LTE FeMBMS(Rel-14)**

*Type: CR For: Agreement  
 36.101 v14.16.0 CR-5691 rev 1 Cat: F (Rel-14)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015589)

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

**R4-2015590 CR on cleanup for LTE FeMBMS(Rel-15)**

*Type: CR For: Agreement  
 36.101 v15.12.0 CR-5692 Cat: A (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Remove square brackets in LTE FeMBMS performance requirements.

**Discussion:**

The secretary commented that the CR number 5692 is missing on the coversheet. See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **revised to R4-2017453**.

**R4-2017453 CR on cleanup for LTE FeMBMS(Rel-15)**

*Type: CR For: Agreement  
 36.101 v15.12.0 CR-5692 rev 1 Cat: A (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015590)

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

**R4-2015591 CR on cleanup for LTE FeMBMS(Rel-16)**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5693 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Remove square brackets in LTE FeMBMS performance requirements.

**Discussion:**

The secretary commented that the CR number 5693 is missing on the coversheet. See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **revised to R4-2017454**.

**R4-2017454 CR on cleanup for LTE FeMBMS(Rel-16)**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5693 rev 1 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015591)

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

**R4-2015630 CR: Updates to LTE V2X performance requirements**

*Type: CR For: Agreement  
 36.101 v14.16.0 CR-5695 Cat: F (Rel-14)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The square bracket of SNR point @ 10% BLER for soft buffer test requirement in Table 14.7-2 is still existing.

For PSCCH/PSSCH decoding test, this test can’t verify the maximum number of bits per TTI and it is verified on soft buffer test.

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

**R4-2017645 CR: Updates to LTE V2X performance requirements**

*Type: other For: Agreement  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **withdrawn**.

**R4-2017646 CR: Updates to LTE V2X performance requirements**

*Type: other For: Agreement  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **withdrawn**.

**R4-2017656 CR: Updates to LTE V2X performance requirements**

*Type: CR For: Agreement  
 36.101 v15.12.0 CR-5711 Cat: A (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

**R4-2017657 CR: Updates to LTE V2X performance requirements**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5712 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

**R4-2015835 CR: Addition of applicability for MTC UE capable of 64QAM DL**

*Type: CR For: Agreement  
 36.101 v15.12.0 CR-5699 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

No applicability rule is specified for PDSCH demodulation requirements with 64QAM for MTC UE

**Discussion:**

Session Chair Note: same CR as R4-2010463 agreed in RAN4#96-e, missed to be implemented in TS36.101 V15.12.0. Corresponding CAT CR already implemented in TS36.101 V16.6.0.

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

**R4-2015668 CR for 36.101: Cleanup for performance requirements of sTTI (Rel-15)**

*Type: CR For: Agreement  
 36.101 v15.12.0 CR-5697 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

SNR test points and CQI reporting requirements are in []

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **revised to R4-2017455**.

**R4-2017455 CR for 36.101: Cleanup for performance requirements of sTTI (Rel-15)**

*Type: CR For: Agreement  
 36.101 v15.12.0 CR-5697 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015668)

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

**R4-2015669 CR for 36.101: Cleanup for performance requirements of sTTI (Rel-16)**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5698 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

SNR test points and CQI reporting requirements are in []

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **revised to R4-2017456**.

**R4-2017456 CR for 36.101: Cleanup for performance requirements of sTTI (Rel-16)**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5698 rev 1 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015669)

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **revised to R4-2017680**.

**R4-2017680 CR for 36.101: Cleanup for performance requirements of sTTI (Rel-16)**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5698 rev 2 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2017456)

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

#### 5.4.2 BS demodulation requirements [WI code or TEI]

**R4-2014944 Correction of eLAA FRC table**

*Type: CR For: Agreement  
 36.141 v14.11.0 CR-1280 Cat: F (Rel-14)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Fixed reference channel table of eLAA contains wrong reference channel identification. In the current version of the specification, there are duplicated FRCs identified by A18-1 and A.18-2.

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

**R4-2014945 Correction of eLAA FRC table**

*Type: CR For: Agreement  
 36.141 v15.10.0 CR-1281 Cat: A (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Fixed reference channel table of eLAA contains wrong reference channel identification. In the current version of the specification, there are duplicated FRCs identified by A18-1 and A.18-2.

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

**R4-2014946 Correction of eLAA FRC table**

*Type: CR For: Agreement  
 36.141 v16.7.0 CR-1282 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Fixed reference channel table of eLAA contains wrong reference channel identification. In the current version of the specification, there are duplicated FRCs identified by A18-1 and A.18-2.

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

## 6 Rel-16 Work Items for LTE

### 6.1 Additional MTC enhancements for LTE [LTE\_eMTC5]

#### 6.1.1 RF core requirements maintenance [LTE\_eMTC5-Core]

#### 6.1.2 RRM core requirements maintenance [LTE\_eMTC5-Core]

**R4-2017024 Email discussion summary for [97e][225] LTE\_eMTC5\_RRM**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][225] LTE\_eMTC5\_RRM. The email thread was moderated by Kazuyoshi Uesaka (Ericsson Japan K.K.) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017295**.

**R4-2017295 Email discussion summary for [97e][225] LTE\_eMTC5\_RRM**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2017024)

**Discussion:**

The contribution summarized email discussion thread [97e][225] LTE\_eMTC5\_RRM. The email thread was moderated by Kazuyoshi Uesaka (Ericsson Japan K.K.) and treated during RRM session chaired by Andrey Chervyakov (Intel).

1st round email discussion conclusions

**Topic #1: RRM Core requirements maintenance**

**Topic #2: RRM Performance requirements**

Issue 2-1-1: Test scope of RLM with MPDCCH performance improvement

* Agreements:
  + Introduce new Out-of-synch test cases for MPDDCH performance improvement with FD-FDD/HD-FDD/TDD for BL UE CE Mode A
  + Introduce new Early out-of-synch test cases for MPDDCH performance improvement with FD-FDD/HD-FDD/TDD for BL UE CE Mode B

Issue 2-1-3: Serving cell measurement relaxation test

* Agreements:
  + Serving cell measurement relaxation test is introduced only for normal coverage

**Decision:** The document was **noted**.

**R4-2015778 [LS] Discussion on remaining issues in RSS measurement and eMTC in RRC\_Inactive state**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **noted**.

**R4-2015779 CR on RSS measurement requirements**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6979 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

There are several issues in current RSS measurement requirements

1. rmax\*G is not considered in measurement period for Connected mode

2. Time relation between MG and RSS is unclear

3.RSRQ measurement may be required but it is not defined for RSS

4.Determination of time location of neighbour cell RSS is unclear

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **revised to R4-2017068**.

**R4-2017068 CR on RSS measurement requirements**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6979 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015779)

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **agreed**.

**R4-2015780 CR to introduce measurement requirements for eMTC in RRC\_Inactive**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6980 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

RAN2 has introduced support of Inactive state for eMTC in Rel-16, and asks RAN4 to define correpsonding measurement requirements.

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **revised to R4-2017069**.

**R4-2017069 CR to introduce measurement requirements for eMTC in RRC\_Inactive**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6980 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015780)

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **agreed**.

**R4-2016141 Discussions on measurement requirement for eMTC UE in RRC\_INACTIVE**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

RAN4 has received a LS from RAN2 regarding the measurement requirements for eMTC UE in RRC\_INACTIVE state, and this LS is discussed in this contribution.

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **noted**.

**R4-2016142 Measurement requirement for eMTC UE in RRC\_INACTIVE**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6991 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

RAN4 has received a LS [R2-2008234] stating that RRC\_INACTIVE state is supported for eMTC UE (BL UE and UE in CE) connected to 5GC. This CR contains changes to define the requirements that apply in RRC\_INACTIVE state.

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **merged**.

**R4-2016143 Corrections to RSS based measurement requirements**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6992 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The conditions for RSS based intra-frequency neighbour cell requirements are currently specified as function of MPDCCH bandwidth. Since these requirements apply to IDLE mode UEs, the use of “MPDCCH bandwidth” shall be avoided since the UE is not configured with MPDCCH in IDLE mode.

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **merged**.

**R4-2016547 RRM requirements for eMTC UE in RRC\_INACTIVE state**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-7001 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Rel-16 adds support of RRC\_INACTIVE state for eMTC UE connected to 5GC. Corresponding measurement requirements in RRC\_INACTIVE state have not been specified.

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **merged**.

**R4-2016587 Correction to RSS based measurement requirements**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-7009 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

CR 6949 was agreed at RAN4 #96-e in R4-2012187 on the matter of finalizing RSS based measurement requirements for LTE-MTC.

One error and few ambiguities were discovered in the review of these sections.

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **revised to R4-2017070**.

**R4-2017070 Correction to RSS based measurement requirements**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-7009 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

(Replaces R4-2016587)

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **agreed**.

#### 6.1.3 RRM perf. requirements [LTE\_eMTC5-Perf]

**R4-2017071 Big CR: Introduction of Rel-16 eMTC RRM performance requirements (TS 36.133)**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-7010 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

##### 6.1.3.1 General [LTE\_eMTC5-Perf]

##### 6.1.3.2 Test cases [LTE\_eMTC5-Perf]

**R4-2015781 draftCR to introduce RSS related test cases**

*Type: draftCR For: Endorsement  
 36.133 v16.7.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Based on R4-2012192, RRM test cases are to be introduced to 1) Verify the cell reselection requirements when UE performs measurements based on RSS based RSRP, and to 2) Verify RSS based RSRP measurement accuracy requirements.

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **endorsed**.

**R4-2015841 Test cases of RLM for MPDCCH performance improvement**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the test cases of RLM for MPDCCH performance improvement.

Proposal 1: Introduce new Out-of-synch test cases for MPDDCH performance improvement with FD-FDD/HD-FDD/TDD for BL UE CE Mode A.

Proposal 2: Introduce new Early out-of-synch test cases for MPDDCH performance improvement with FD-FDD/HD-FDD/TDD for BL UE CE Mode B.

Proposal 3: Set SNR2/SNR3 1dB lower compared with the existing out-of-synch/early out-of-synch test cases.

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **noted**.

**R4-2015842 Draft CR: Test cases of RLM for MPDCCH performance improvement**

*Type: draftCR For: Endorsement  
 36.133 v16.7.0  
 Source: Ericsson*

**Abstract:**

Addition of test cases of RLM for MPDCCH performance improvement

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **revised to R4-2017072**.

**R4-2017072 Draft CR: Test cases of RLM for MPDCCH performance improvement**

*Type: draftCR For: Endorsement  
 36.133 v16.7.0  
 Source: Ericsson*

(Replaces R4-2015842)

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **endorsed**.

**R4-2016144 Discussions on testing serving cell measurement relaxation requirements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the methods for testing serving cell measurement relaxation requirements, further discuss the coverage level impact on the test delay.

Proposal: Serving cell measurement relaxation test is introduced only for normal coverage.

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **noted**.

**R4-2016145 Test case on serving cell relaxation for eMTC**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6993 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Relaxed serving cell measurement requirements are introduced in release 16 for eMTC, and test case is needed to veirfy thhose requirements.

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **endorsed**.

**R4-2016552 Test cases for DL channel quality report accuracy for eMTC UE**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-7006 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Rel-16 adds support for DL channel quality report for eMTC UE. Test cases to verify DL channel quality report accuracy requirements need to be defined.

**Discussion:**

See email discussion summary for [97e][225] LTE\_eMTC5\_RRM in R4-2017024.

**Decision:** The document was **endorsed**.

#### 6.1.4 Demodulation and CSI requirements maintenance (36.101) [LTE\_eMTC5-Perf]

##### 6.1.4.1 UE demodulation requirements [LTE\_eMTC5-Perf]

**R4-2015836 Clean up of enhanced MPDCCH demodulation requirements**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5700 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Removal of [] from the requirements.

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

##### 6.1.4.2 CSI requirements [LTE\_eMTC5-Perf]

**R4-2015837 Clean up of CSI-RS based PMI reporting test for non-BL UEs**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5701 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Correction of CSI-RS based PMI reporting test for non-BL UEs.

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **revised to R4-2017458**.

**R4-2017458 Clean up of CSI-RS based PMI reporting test for non-BL UEs**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5701 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015837)

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

### 6.2 Additional enhancements for NB-IoT [NB\_IOTenh3]

#### 6.2.1 RF core requirements maintenance [NB\_IOTenh3-Core]

#### 6.2.2 RRM core requirements maintenance [NB\_IOTenh3-Core]

**R4-2017025 Email discussion summary for [97e][226] NB\_IOTenh3\_RRM**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][226] NB\_IOTenh3\_RRM. The email thread was moderated by Zhongyi Shen (Huawei) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017296**.

**R4-2017296 Email discussion summary for [97e][226] NB\_IOTenh3\_RRM**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2017025)

**Discussion:**

The contribution summarized email discussion thread [97e][226] NB\_IOTenh3\_RRM. The email thread was moderated by Zhongyi Shen (Huawei) and treated during RRM session chaired by Andrey Chervyakov (Intel).

1st round email discussion conclusions

**Topic #1: RRM Core requirements maintenance**

Tdoc decisions

**Topic #2: RRM Performance requirements**

Issue 2-1: MSG3-based channel quality report test on non-anchor carrier

* Agreements:
  + Reuse the Rel-14 MSG3-based channel quality report test on anchor for Rel-16 MSG3-based channel quality report test on non-anchor.
  + Configure NPDCCH carrier index (ndpcch-CarrierIndex-r14) for Rel-16 MSG3-based channel quality report test on non-anchor.

**Decision:** The document was **noted**.

**R4-2015512 CR on PUR requirements for NB-IoT**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6970 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The CR is the resubmitted CR of R4-2012193, which is not implemented due to some changes without change mark.

There are some issues with requirements in 4.6.3 related to PUR:

timing alignment validation and NRSRP changed validation are two independent mechanisms, so when only NRSRP-ChangeThresh-NB-r16 is configured, the TA validation should not depend on timing alignment validation

TA validation with NRSRP1 and NRSRP2 are also defined in clause 5.3.3.19 of 36.331, instead of RAN4 36.133.

N value is not defined for the case when relaxed serving cell monitoring is not in use.

**Discussion:**

See email discussion summary for [97e][226] NB\_IOTenh3\_RRM in R4-2017025.

**Decision:** The document was **agreed**.

**R4-2015513 CR on RRM requirements for short DRX with eDRX configured for Rel-16 NB-IoT**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6971 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon, Mediatek Inc.*

**Abstract:**

In the current requirements for the new introduced short DRX cycle length 320 ms and 640 ms, the measurement requirement Tmeasure for neighbor cell measurement and ECID is scaled, which means UE does not need to perform measurement too frequently with the short DRX cycles. However, when eDRX is configured, the corresponding requirements are not relaxed in order to let UE complete the measurement within the same PTW as possible. It could be observed that the minimum configurable PTW length is 2.56 s, which allows multiple measurement occasions when DRX is 320 ms. It is proposed in this paper to also scale the requirements when eDRX is configured, as the benefit to let UE perform measurement every short DRX when eDRX is configured is not significant but it will lead to unnecessary power consumption and UE’s efforts. The same changes are made in ECID.

There are some typos and misalignments in the spec need to be fixed.

**Discussion:**

See email discussion summary for [97e][226] NB\_IOTenh3\_RRM in R4-2017025.

**Decision:** The document was **revised to R4-2017074**.

**R4-2017074 CR on RRM requirements for short DRX with eDRX configured for Rel-16 NB-IoT**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6971 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon, Mediatek Inc.*

(Replaces R4-2015513)

**Discussion:**

See email discussion summary for [97e][226] NB\_IOTenh3\_RRM in R4-2017025.

**Decision:** The document was **agreed**.

#### 6.2.3 RRM perf. requirements [NB\_IOTenh3-Perf]

**R4-2017073 Big CR: Introduction of Rel-16 Nb-IoT RRM RRM performance requirements (TS 36.133)**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-7011 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

##### 6.2.3.1 General [NB\_IOTenh3-Perf]

##### 6.2.3.2 Test cases [NB\_IOTenh3-Perf]

**R4-2015514 Draft CR on test cases for UE specific DRX cycles for Rel-16 NB-IoT**

*Type: draftCR For: Endorsement  
 36.133 v16.7.0  
 Source: Huawei, HiSilicon*

**Abstract:**

The test cases for UE specifc DRX cycle length is missing.

**Discussion:**

See email discussion summary for [97e][226] NB\_IOTenh3\_RRM in R4-2017025.

**Decision:** The document was **revised to R4-2017075**.

**R4-2017075 Draft CR on test cases for UE specific DRX cycles for Rel-16 NB-IoT**

*Type: draftCR For: Endorsement  
 36.133 v16.7.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015514)

**Discussion:**

See email discussion summary for [97e][226] NB\_IOTenh3\_RRM in R4-2017025.

**Decision:** The document was **endorsed**.

**R4-2015816 Test cases of MSG3 channel quality report on non-anchor carrier**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the test cases of MSG3 channel quality report on non-anchor carrier.

Proposal 1: Reuse the Rel-14 MSG3-based channel quality report test on anchor for Rel-16 MSG3-based channel quality report test on non-anchor.

Proposal 2: Configure NPDCCH carrier index (ndpcch-CarrierIndex-r14) for Rel-16 MSG3-based channel quality report test on non-anchor.

**Discussion:**

See email discussion summary for [97e][226] NB\_IOTenh3\_RRM in R4-2017025.

**Decision:** The document was **noted**.

**R4-2015817 Draft CR: MSG3 based channel quality reporting on non-anchor carrier**

*Type: draftCR For: Endorsement  
 36.133 v16.7.0  
 Source: Ericsson*

**Abstract:**

Introduction of test case of MSG3-based channel quality reporting on non-anchor carrier

**Discussion:**

See email discussion summary for [97e][226] NB\_IOTenh3\_RRM in R4-2017025.

**Decision:** The document was **revised to R4-2017076**.

**R4-2017076 Draft CR: MSG3 based channel quality reporting on non-anchor carrier**

*Type: draftCR For: Endorsement  
 36.133 v16.7.0  
 Source: Ericsson*

(Replaces R4-2015817)

**Discussion:**

See email discussion summary for [97e][226] NB\_IOTenh3\_RRM in R4-2017025.

**Decision:** The document was **endorsed**.

**R4-2016553 Test cases for DLchannel quality report accuracy in RRC\_CONNECTED for UE Cat-NB1 Standalone mode**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-7007 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Rel-16 adds support for DLchannel quality report in RRC\_CONNECTED for UE Cat-NB1. Test cases to verify DL channel quality report accuracy requirements in RRC\_CONNECTED need to be defined.

**Discussion:**

See email discussion summary for [97e][226] NB\_IOTenh3\_RRM in R4-2017025.

**Decision:** The document was **revised to R4-2017077**.

**R4-2017077 Test cases for DLchannel quality report accuracy in RRC\_CONNECTED for UE Cat-NB1 Standalone mode**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-7007 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2016553)

**Discussion:**

See email discussion summary for [97e][226] NB\_IOTenh3\_RRM in R4-2017025.

**Decision:** The document was **endorsed**.

#### 6.2.4 Demodulation and CSI requirements maintenance (36.101/36.104) [NB\_IOTenh3-Perf]

##### 6.2.4.1 UE demodulation requirements [NB\_IOTenh3-Perf]

**R4-2015631 CR: Cleanup for NPDSCH performance requirements for multi-TB interleaved transmission in TS 36.101**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5696 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The square bracket of SNR point @ 70% Throughput for NPDSCH with multi-TB interleaved transmission in Table 8.12.1.1.4-2 is still existing.

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **revised to R4-2017457**.

**R4-2017457 CR: Cleanup for NPDSCH performance requirements for multi-TB interleaved transmission in TS 36.101**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5696 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015631)

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

##### 6.2.4.2 BS demodulation requirements [NB\_IOTenh3-Perf]

**R4-2015632 CR: Addition of NPUSCH format1 performance requirements for multi-TB interleaved transmission in TS 36.104**

*Type: CR For: Agreement  
 36.104 v16.7.0 CR-4915 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Performance requirements part for NPUSCH format 1 with multi-TB interleaved transmission agreed in R4-2012600 was not implemented in latest TS 36.104 version 16.7.0.

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

**R4-2015633 CR: Cleanup for NPUSCH format 1 conformance testing for multi-TB interleaved transmission in TS 36.141**

*Type: CR For: Agreement  
 36.141 v16.7.0 CR-1284 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The square bracket of SNR point @ 70%of maximum throughput in Table 8.5.1.5-4 is still exsiting

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

### 6.3 Even further Mobility enhancement in E-UTRAN [LTE\_feMob]

**R4-2017026 Email discussion summary for [97e][227] LTE\_feMob\_RRM**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [97e][227] LTE\_feMob\_RRM. The email thread was moderated by Delia Chen (Nokia) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017297**.

**R4-2017297 Email discussion summary for [97e][227] LTE\_feMob\_RRM**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2017026)

**Discussion:**

The contribution summarized email discussion thread [97e][227] LTE\_feMob\_RRM. The email thread was moderated by Delia Chen (Nokia) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

#### 6.3.1 RRM core requirements maintenance [LTE\_feMob-Core]

**R4-2015502 Correction on the synchronous condition for DAPS handover**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6969 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Aligning with the agreement for NR mobility enhancement [R4-2012265], the synchronous condition are revised

In current specification, Notes 2/3 clairfies to leave enough time for UE performing DL-to-UL and UL-to-DL switching only from single cell perspective. However, the UE shall be allowed to switching time between both source cell and target cell.

**Discussion:**

See email discussion summary for [97e][227] LTE\_feMob\_RRM in R4-2017026.

**Decision:** The document was **revised to R4-2017322**.

**R4-2017322 Correction on the synchronous condition for DAPS handover**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6969 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015502)

**Discussion:**

See email discussion summary for [97e][227] LTE\_feMob\_RRM in R4-2017026.

**Decision:** The document was **agreed**.

**R4-2016385 Correction on LTE conditional handover**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6997 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The equation of conditional handover delay in LTE is not readable and not aligned with NR conditional handover.

**Discussion:**

See email discussion summary for [97e][227] LTE\_feMob\_RRM in R4-2017026.

**Decision:** The document was **revised to R4-2017079**.

**R4-2017079 Correction on LTE conditional handover**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6997 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016385)

**Discussion:**

See email discussion summary for [97e][227] LTE\_feMob\_RRM in R4-2017026.

**Decision:** The document was **agreed**.

#### 6.3.2 RRM perf. requirements [LTE\_feMob-Perf]

**R4-2017078 WF on further test cases for LTE feMob**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][227] LTE\_feMob\_RRM in R4-2017026.

**Decision:** The document was **revised to R4-2017374**.

**R4-2017374 WF on further test cases for LTE feMob**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2017078)

**Discussion:**

See email discussion summary for [97e][227] LTE\_feMob\_RRM in R4-2017026.

**Decision:** The document was **approved**.

##### 6.3.2.1 General [LTE\_feMob-Perf]

##### 6.3.2.2 Test cases [LTE\_feMob-Perf]

**R4-2015501 Test cases for inter-frequency DAPS handover**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6968 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Define the test cases for inter-frequency DAPS

**Discussion:**

See email discussion summary for [97e][227] LTE\_feMob\_RRM in R4-2017026.

**Decision:** The document was **agreed**.

**R4-2016384 Test cases for LTE conditional handover**

*Type: draftCR For: Endorsement  
 36.133 v16.7.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Add test cases for LTE conditional handover

**Discussion:**

See email discussion summary for [97e][227] LTE\_feMob\_RRM in R4-2017026.

**Decision:** The document was **revised to R4-2017308**.

**R4-2017308 Test cases for LTE conditional handover**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-7012 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016384)

**Discussion:**

See email discussion summary for [97e][227] LTE\_feMob\_RRM in R4-2017026.

**Decision:** The document was **agreed**.

**R4-2016554 Introduction of intra-frequency sync and async LTE DAPS HO test cases**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-7008 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Per work split agreement in RAN4#95-e meeting, the test cases for intra-frequency LTE DAPS HO are introduced in this CR. To avoid having multiple test cases, FDD-FDD test case is specified in async mode and TDD-TDD test case is specified in sync mode. Per agreements in RAN4#96-e for NR mobility WI, the tests consist of 5 intervals and the last interval is used to verify the CSI reporting to source cell is stopped.

**Discussion:**

See email discussion summary for [97e][227] LTE\_feMob\_RRM in R4-2017026.

**Decision:** The document was **agreed**.

### 6.4 R16 LTE maintenance [WI code]

#### 6.4.1 BS RF requirements [WI code]

#### 6.4.2 UE RF requirements [WI code]

**R4-2014045 Correction of B88 UL EARFCN**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5676 Cat: F (Rel-16)  
  
 Source: Huawei,HiSilicon*

**Abstract:**

In LTE, the EARFCN should be unique for each band. However, in the current spec the UL starting EARFCN of band 88 equals to the UL end EARFCN of band 87.

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

**R4-2014162 LTE CA\_NS\_04 PC2 256QAM AMPR**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5677 Cat: F (Rel-16)  
  
 Source: Qualcomm Inc.*

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **withdrawn**.

**R4-2014163 LTE CA\_NS\_04 PC2 256QAM AMPR**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5678 Cat: F (Rel-16)  
  
 Source: Qualcomm Inc.*

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **withdrawn**.

**R4-2014164 CR CatF LTE CA\_NS\_04 PC2 256QAM AMPR**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5679 Cat: F (Rel-16)  
  
 Source: Qualcomm*

**Abstract:**

CA\_NS\_04 256QAM AMPR is missing.

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **not pursued**.

**R4-2014510 LTE CA corrections**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5683 Cat: F (Rel-16)  
  
 Source: Nokia*

**Abstract:**

R4-2006725 was not implemented properly.

CA\_13A-48A-48A-66A disappeared from Table 5.6A.1-2a in v16.6.0 with out a CR and is stil in clasue 7 and errors to other configurations emerged.

CA\_2A-48E-66A-66A has wrong aggregated BW. CA\_1A-18A-41C has invalid BCS reference.

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

**R4-2014511 Band 88 and 87 bracket removal**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5684 Cat: F (Rel-16)  
  
 Source: Nokia*

**Abstract:**

RAN5 is developping test cases for bands 87 and 88 but those these bands have brackets in RAN4 M2 REFSENS requirement which means that the requriement is untestable.

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

**R4-2014897 Coexistence cleanup for 36101 Rel16**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5686 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

Rel-16 features several band protections which are not technical possible due to sometimes TDD bands with overlapping regions are protected or similar issues. The CR focuses on correcting false protections so that a UE will not face technical impossible emission requirements.

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

**R4-2016008 LTE CA\_NS\_08 A-MPR Correction**

*Type: discussion For: Approval  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this paper we propose a correction to the inner 0dB A-MPR region which is captured in subsequent Change Requests. Since all B42 networks are synchronized, we intend in future meetings to pursue the removal of CA\_NS\_08 requirements [1] in coordination with the relevant regulatory bodies, e.g. CEPT.

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **noted**.

**R4-2016040 CR Correction to B72 coex - CA\_NS\_08 - Band 10 protection 36.101 Rel16**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5703 Cat: A (Rel-16)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Three combined CR according to meeting guidelines:

- Restore Band 72 list of protected bands, ie B72 and B31,

- Band 10 protection removal has been agreed in R4-2011521. This CR applies this correction to Release 15,

- Allow CA A-MPR for inner region CA\_NS\_08 allocations

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **revised to R4-2016997**.

**R4-2016997 CR Correction to B72 coex - CA\_NS\_08 - Band 10 protection 36.101 Rel16**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5703 rev 1 Cat: A (Rel-16)  
  
 Source: Skyworks Solutions Inc.*

(Replaces R4-2016040)

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

**R4-2016129 CR to TS 36.101 clarifications on supported SCS for UE supporting LTE MBMS**

*Type: CR For: Agreement  
 36.101 v14.16.0 CR-5704 Cat: F (Rel-14)  
  
 Source: ZTE Corporation*

**Abstract:**

In the existing spec TS36.101, there was some ambiguity existing for UE supporting LTE MBMS that whether all SCS should be supported. Basd on the agreement in R4-2012604, MBMS UE doesn’t have to support all of the SCS, if UE support LTE MBMS.

**Discussion:**

The secretary wondered what is the correct Release? It reads Rel-15 on the coversheet but the CR is allocated for Rel-14. See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **not pursued**.

**R4-2016130 CR to TS 36.101 clarifications on supported SCS for UE supporting LTE MBMS**

*Type: CR For: Agreement  
 36.101 v15.12.0 CR-5705 Cat: A (Rel-15)  
  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **withdrawn**.

**R4-2016131 CR to TS 36.101 clarifications on supported SCS for UE supporting LTE MBMS**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5706 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **withdrawn**.

**R4-2016340 CR for editorial corrections 36.101**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5707 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Editorial corrections 36.101

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **revised to R4-2016795**.

**R4-2016795 CR for editorial corrections 36.101**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5707 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016340)

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

**R4-2016426 LTE CA\_NS\_04 PC2 256QAM AMPR**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Abstract:**

Observation 1: The LTE 256QAM CA\_NS\_04 back-off should be at least be allowed the same back-off as the single CC NR DFT-s-OFDM 256QAM back-off within the similar RB boundary condition. Both back-off is calculated as max (MPR, AMPR).

Proposal: Modify Power Class 2 LTE CA\_NS\_04 AMPR as in Table 2.1

**Discussion:**

See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **noted**.

**R4-2016450 CR for 36.101: Corrections for UL CA\_41D**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5708 Cat: F (Rel-16)  
  
 Source: T-Mobile USA*

**Abstract:**

There is an incorrect reference to a void section

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][105] LTE\_Maintenance in R4-2016607.

**Decision:** The document was **agreed**.

#### 6.4.3 RRM requirements [WI code]

**R4-2015879 CR on performance requirements tests for euCA.**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6984 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Missing accuracy requirements for the euCA RSRP and RSRQ measurements.

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **revised to R4-2017062**.

**R4-2017062 CR on performance requirements tests for euCA.**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6984 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015879)

**Discussion:**

See email discussion summary for [97e][203] LTE\_RRM\_maintenance in R4-2017002.

**Decision:** The document was **agreed**.

#### 6.4.4 Demodulation and CSI requirements [WI code]

##### 6.4.4.1 UE demodulation and CSI requirements [WI code]

**R4-2015613 CR on cleanup for LTE-based 5G terrestrial broadcast**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5694 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Remove square brackets in LTE-based 5G terrestrial broadcast performance requirements.

**Discussion:**

The secretary commented that the CR number 5694 is missing on the coversheet. See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **revised to R4-2017459**.

**R4-2017459 CR on cleanup for LTE-based 5G terrestrial broadcast**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5694 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015613)

**Discussion:**

See email discussion summary for [97e][313] LTE\_Demod\_Maintenance in R4-2017411.

**Decision:** The document was **agreed**.

##### 6.4.4.2 BS demodulation requirements [WI code]

## 7 Rel-16 non-spectrum related work items for NR

### 7.1 NR-based access to unlicensed spectrum [NR\_unlic]

#### 7.1.1 System Parameters [NR\_unlic-Core]

**R4-2016608 Email discussion summary for [97e][106] NR\_unlic\_SysParameters**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][106] NR\_unlic\_SysParameters. The subject for discussion was System Parameter, Band combination related (Analysis, TPs, etc). The email thread was moderated by Reihaneh Malekafzaliardakani (Ericsson GmbH, Eurolab) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016950**.

**R4-2016950 Email discussion summary for [97e][106] NR\_unlic\_SysParameters**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2016608)

**Discussion:**

The contribution summarized email discussion thread [97e][106] NR\_unlic\_SysParameters. The subject for discussion was System Parameter, Band combination related (Analysis, TPs, etc). The email thread was moderated by Reihaneh Malekafzaliardakani (Ericsson GmbH, Eurolab) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2017835 WF on NR-U continuation work**

*Type: other For: discussion  
 Source: Skyworks*

**Decision:** The document was **approved**.

**R4-2014496 [NRU] Justification of band n96 channelization**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution, we provide justification for the band n96 channelization in order to remove brackets in 38.101-1.

Proposal: Brackets can be removed from 38.101-1 Table 5.4.2.3-3 values.

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **noted**.

##### 7.1.1.1 60kHz SCS [NR\_unlic-Core]

**R4-2014887 NR-U 60kHz SCS**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Abstract:**

Proposal: For 60kHz SCS, adopt alternative 1 for intra-carrier guard bands (i.e. 5 RBs for in-carrier guard band with 23-5-23 pattern).

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **noted**.

**R4-2015694 On remaining issues for system parameters**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: It is proposed to revise channel raster, GSCN and transmission bandwidth configuration as proposed in section 2.

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **noted**.

##### 7.1.1.2 Wideband operation related [NR\_unlic-Core]

**R4-2014621 Discussion on LS on UE capability on wideband carrier operation for NR-U**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Abstract:**

Proposal 1: UL wide-band transmission mode 1 assumes that LBT is successful in all LBT sub-bands of BWP, irrespective of which sub-bands are scheduled with data.

Proposal 2: For UL WB operation, only Mode 1 is introduced as a basic feature, while Mode 2A and 2B should be removed according to Section 4.2.1.0.4 of TS 37.213.

Proposal 3: For DL WB operation, Mode 1 is introduced as a basic feature, while Mode 2 and 3 are introduced as optional features.

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **noted**.

**R4-2014888 NR-U wideband capabilities**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Abstract:**

Proposal 1a: DL wide-band mode 1 can be construed as the baseline NR-U functionality.

Proposal 1b: DL wide-band mode 2 and 3 must be differentiated from mode 1.

Proposal 1c: Discuss further whether DL mode 2 and 3 should have separate capabilities or they can be covered by the same "mode 2/3" capability.

Proposal 1c: DL wide-band mode 1 UE performance requirements apply only if sub-bands of the configured channel contain serving gNB transmission.

Proposal 2a: A UE should perform LBT only for those sub-bands where data is scheduled.

Proposal 2b: If Proposal 2a is agreeable, then UL wide-band mode 1 is not needed as the UE behaviour will always correspond to UL mode 2A/2B.

Proposal 2c: It is preferable to have differentiation between 2A and 2B accounting for different UE LBT capabilities.

Proposal 3: Add the corresponding NR-U capabilities into the RAN WG4 feature list and inform other WGs about it.

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **noted**.

**R4-2015251 NR-U - On wideband operation**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Proposal 1: Agree that there is no difference in UE capability between DL Cases 2a/2b/3 and DL Case 4.

Proposal 2: No UE capabilities are needed for DL wideband operation.

Observation 1: RAN2 did not reserve any bits for non-agreed UE capabilities based on the RAN1 request.

Proposal 3: Further discus UE capabilities for UL wideband operation.

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **noted**.

**R4-2015972 Correction to the intra-cell guard band definition for wideband operation**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0550 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

For operations with shared spectrum access, the UE is configured with intra-cell guard bands by the IE intraCellGuardBandsDL-List and intraCellGuardBandsUL-List for the DL and UL, respectively. If these IEs as defined din 38.331 are absent, the guard-band sizes specified in sub-clause 5.3.3 of 38.101-1 applies, from 38.331,

intraCellGuardBandsDL-List, intraCellGuardBandsUL-List

List of intra-cell guard bands in a serving cell for operation with shared spectrum channel access. If not configured, the guard bands are defined according to 38.101-1 [15], see TS 38.214 [19], clause 7. For operation in licensed spectrum, and no UE action is required.

The 38.101-1 defines ‘wideband operation’ as

Wideband operation: For a UE that supports shared spectrum channel access, wideband operation refers to operation within a channel larger than 20 MHz in which intra-cell guard bands may be configured to distinguish individual RB-sets

hence not including operations with the 10 MHz and 20 MHz channel bandwidths. However, it is not obvious from sub-clause 5.3.3 that that there are no intra-cell GB for these bandwidths; the 20 MHz channel bandwidth is nevertheless included in Table 5.3.3-2 defining the nominal GB for wideband operations.

Since 38.331 refers to 38.101-1 for the guard-band sizes when the above IEs are absent, the intra-cell GB configuration must be clearly defined for all channel bandwidths.

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **revised to R4-2016797**.

**R4-2016797 Correction to the intra-cell guard band definition for wideband operation**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0550 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015972)

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **revised to R4-2017825**.

**R4-2017825 Correction to the intra-cell guard band definition for wideband operation**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0550 rev 2 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016797)

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **revised to R4-2017845**.

**R4-2017845 Correction to the intra-cell guard band definition for wideband operation**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0550 rev 3 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2017825)

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **agreed**.

**R4-2016438 Wideband capability for NR-U**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

Proposal: From a RAN4 perspective, none of the feature groups is needed for Rel-16 since requirements are not available or the feature group is already part of the baseline assumption that all UE’s are expected to support.

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **noted**.

##### 7.1.1.3 Others [NR\_unlic-Core]

**R4-2014889 NR-U CA bandwidth classes**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Abstract:**

Proposal 1: Revise NR CA BW classes definition based on the changes shown in Table 2.1-3 to support NR-U intra-band contiguous CA.

Proposal 2: Merge NR-U CA configurations CA\_n46G, CA\_n46H, and CA\_n46I into CA\_n46M, n46N, and n46O respectively as shown in Table 2.2-2.

Proposal 3: Remove CA BW class “I” from NR-U DL CA Rx requirements for ACS, in-band blocking, and out-of-band blocking as it can be covered by CA BW class “O”.

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **noted**.

**R4-2015973 Correction to CA bandwidth classes M, N and O**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0551 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The aggregated bandwidth of CA BW classes M, N and O should support bandwidth combinations down to 10 + 2\*20 MHz, 3\*20 MHz and 4\*20 MHz, respectively. This is not allowed by the strict inequalities in the lower limits for M and N.

The upper limits of the aggregated bandwidths are within square brackets, the tentative limits based on \*60 MHz. Aggregation of up to four carriers with 80 MHz and 100 MHz channel bandwidths is covered by the respective classes B, C, D and E. To that end, the square brackets for M and N can be removed. For 5 CC a new (general) CA BW class applicable for all relevant bands can be defined when needed.

Use of BCS is likely regardless of the value of the upper limit.

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **not pursued**.

**R4-2016123 Discussion on NR-U channel arrangement for 6GHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Abstract:**

Proposal 1: further discuss how to apply the FCC requirements and AFC or non-AFC policy for the carriers across U-NII bands;

Observation: it is very challenging to achieve the required attenuation for lower edge and upper edge of 6GHz assuming -27dBm/MHz emission limit needed out of 6GHz band in FCC report.

Proposal 2: to achieve emission limit -27dBm/MHz required by FCC, either lower the BS output power or reserve more guard band or reserve guard band and put the fitter within the 6GHz band.

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **noted**.

**R4-2016501 NRU small enhancement and exception sheet leftovers beyond RAN4#97e**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution we discuss the options to continue the work next year on some of the Release 16 NRU topics that are leftovers from the last NRU WI exception sheet.

Proposal: Companies views on NRU continuation work in 2021/Release 17 should be collected in order to enable small enhancement steps from Release 16 and devise a strategy for December plenary RAN#90e.

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **noted**.

#### 7.1.2 UE RF requirements [NR\_unlic-Core]

**R4-2016609 Email discussion summary for [97e][107] NR\_unlic\_UE\_RF**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

**Discussion:**

The contribution summarized email discussion thread [97e][107] NR\_unlic\_UE\_RF. The subject for discussion was UE RF requirements. The email thread was moderated by Gene Fong (Qualcomm Korea) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016951**.

**R4-2016951 Email discussion summary for [97e][107] NR\_unlic\_UE\_RF**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

(Replaces R4-2016609)

**Discussion:**

The contribution summarized email discussion thread [97e][107] NR\_unlic\_UE\_RF. The subject for discussion was UE RF requirements. The email thread was moderated by Gene Fong (Qualcomm Korea) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2014916 CR for TS 38.101-1: NR-U UE RF open requirements**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0521 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

To finalize the NR-U UE RF open requirements which were left in square brackets in current technical specifications.

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **not pursued**.

**R4-2015018 Architecture and REFSENS discussion for NR-U 6GHz**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: MediaTek Inc.*

**Abstract:**

Observation 1: There’s no agreed FE architecture for NR-U evaluation assumption

Observation 2: FE architecture for NR-U bands would be similar to the existing L/M/H bands

Observation 3: Band switch shall be considered for the NR-U bands that was not mentioned/accounted in LAA FE architecture assumption

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **noted**.

**R4-2015927 CR to add NR-U EN-DC combinations**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0402 Cat: B (Rel-17)  
  
 Source: Ericsson, Charter Communication, T-Mobile US*

**Abstract:**

CR to add NR-U EN-DC combinations. Same CR as R4-2008431 that was endorsed at RAN4 95-e

**Discussion:**

The secretary wondered what is the correct Release? It reads Rel-16 on the coversheet but the CR is allocated for Rel-17. If neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **revised to R4-2016801**.

**R4-2016801 CR to add NR-U EN-DC combinations**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0402 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson, Charter Communication, T-Mobile US*

(Replaces R4-2015927)

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

The document was agreed during the meeting but revised to R4-2017391afterwards to correct tdoc record in 3GU from Rel-17 to Rel-16. The revision in R4-2017391 is content-wise identical to R4-2016801.

**Decision:** The document was **revised to R4-2017391**.

**R4-2017391 CR to add NR-U EN-DC combinations**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0402 rev 2 Cat: B (Rel-16)  
  
 Source: Ericsson, Charter Communication, T-Mobile US*

(Replaces R4-2016801)

**Decision:** The document was **agreed**.

##### 7.1.2.1 Transmitter characteristics [NR\_unlic-Core]

**R4-2014903 PC5 NR-U MPR for NS\_53 and NS\_54**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Abstract:**

Proposal: Remove brackets for all A-MPR found in NS\_53 and NS\_54

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **noted**.

**R4-2015697 A-MPR evaluation for NR-U**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: A-MPR for NS\_54 is defined in Table 2-2.

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **noted**.

**R4-2016436 Removal of square brackets for 38.101-1 NR-U**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0558 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Some requirements were placed in square brackets in the agreed RP-202117 to allow an opportunity for companies to further check.

**Discussion:**

The secretary commented that (on the coversheet) the specification number should read 38.101-1 instead of TS38.101-1. See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **revised to R4-2016799**.

**R4-2016799 Removal of square brackets for 38.101-1 NR-U**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0558 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2016436)

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **revised to R4-2017837**.

**R4-2017837 Removal of square brackets for 38.101-1 NR-U**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0558 rev 2 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2016799)

**Discussion:**

Chair: ACS of other 6 GHz bands (EU, China, etc) will be discussed separately in the respective WIs.

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **agreed**.

##### 7.1.2.2 Receiver characteristics [NR\_unlic-Core]

**R4-2014185 Discussion and TP for NR-U UE ACS**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: MediaTek Inc.*

**Abstract:**

Observation 1: First, Interferer to signal ratio could be adopted and calculated, and then converted into NR-U ACS and WiFi ACR.

Observation 2: In terms of NR-U UE and WiFi STA interferer to signal ratio, the performance comparison over channel bandwidths in Table 2 can be adopted to define NR-U UE ACS requirement.

Proposal 1: ACS for NR-U UE is 25dB for 20MHz channel bandwidth

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **noted**.

**R4-2014497 [NRU] UE REFSENS for NRU Band n96**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution, we provide justification for REFSENS values for n96 in order to remove bracket in 38.101-1.

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **noted**.

**R4-2015799 UE Reference Sensitivity considerations for band n96**

*Type: Work Plan For: Approval  
 Source: Charter Communications, Inc*

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **noted**.

**R4-2015803 CR to add NR-DC\_n48-n46 combinations**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Charter Communications, Inc*

**Abstract:**

Adding NR-U band combination

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **revised to R4-2016802**.

**R4-2016802 CR to add NR-DC\_n48-n46 combinations**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Charter Communications, Inc*

(Replaces R4-2015803)

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **not pursued**.

**R4-2015974 Correction to receiver requirements for shared spectrum channel access**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0552 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Correct the in-band and out-of-band blocking requirement and add requirements for spurious response.

It has been agreed that the in-band blocking (IBB) requirements should be verified with a 20 MHz interferer bandwidth, the nominal channel bandwidth assumed for the 5 GHz and 6 GHz band in regulatory provisions and that typical for an interferer in these bands for unlicensed operations. For wanted channel bandwidths greater than 20 MHz, the wanted signal level is scaled with the said channel bandwidth.

For intra-band contigous CA IBB requirements, both the wanted signal level and the interferer bandwidth are scaled.

The spurious response requirement in clause 7.7 for licensed bands do not apply for operations with shared spectrum channel access (different blocker interferer range).

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **revised to R4-2016800**.

**R4-2016800 Correction to receiver requirements for shared spectrum channel access**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0552 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015974)

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **agreed**.

**R4-2016294 REFSENS for n96**

*Type: discussion For: Approval  
 Source: Apple Inc.*

**Abstract:**

Observation 1: The wider bandwidth will lower the Q-factor, which will increase the noise figure of the receiver. Consequentially the increase of the NF will affect directly the REFSENS

Proposal 1: For band n96 a margin of 0.5 dB should be considered compared to band n46 for the REFSENS requirement, as shown in Table 1.

**Discussion:**

See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **noted**.

**R4-2016437 Reference sensitivity for NR-U band n96**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

s See email discussion summary for [97e][107] NR\_unlic\_UE\_RF in R4-2016609.

**Decision:** The document was **noted**.

#### 7.1.3 Band combination related (Analysis, TPs, etc.) [NR\_unlic-Core]

**R4-2014954 Discussion on NR-U CA bandwidth classes**

*Type: discussion For: Approval  
 Source: ZTE Corporation*

**Abstract:**

The notation of NR-U CA BW class is still unclear and need further clarifications.

Observation 1: The fallback group for NR CA bandwidth class “D” and “E” in the current specification does not match the agreement captured in [4].

Proposal 1: Keep the description of FBG 3 for NR CA bandwidth classes D and E unchanged in the current specification as it is.

Proposal 2: It is reasonable for classes M and N to capture sign “=” in the lower limits of aggregated channel bandwidth 50MHz and 80MHz respectively.

Proposal 3: It is suggested not to use notation N for NR CA BW class in FR1.

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **noted**.

**R4-2014955 CR to TS 38.101-1 on NR CA bandwidth classes for unlicensed spectrum (Rel-16)**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0522 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

The NR bandwidth classes in Table 5.3A.5-1 have been extended with fallback group 3 (FBG 3) for shared spectrum operating bands in RP-202117. However, for the lower limits of NR CA bandwidth classes “M”, 50MHz should cover one 10MHz channel bandwidth (10 + 20 + 20 MHz to cover 50 MHz allocation). And for class N, the lower limit 80MHz should be set for supporting (4cc x 20MHz) CA combinations. Furthermore, for the newly introduced CA BW class “N”, since NR band number begins with the letter “n”, CA BW class “N” is absent in FR2 to avoid unnecessary confusion. Therefore, it is suggested not to introduce CA BW class “N” in FR1 simlar to FR2.

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **revised to R4-2016798**.

**R4-2016798 CR to TS 38.101-1 on NR CA bandwidth classes for unlicensed spectrum (Rel-16)**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0522 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

(Replaces R4-2014955)

**Discussion:**

See email discussion summary for [97e][106] NR\_unlic\_SysParameters in R4-2016608.

**Decision:** The document was **not pursued**.

#### 7.1.4 BS RF requirements [NR\_unlic-Core]

##### 7.1.4.1 General [NR\_unlic-Core]

**R4-2017403 Email discussion summary for [97e][305] NR\_unlic\_RF\_BS**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [97e][305] NR\_unlic\_RF\_BS. The email thread was moderated by Bartlomiej Golebiowski (Nokia Poland) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017608**.

**R4-2017608 Email discussion summary for [97e][305] NR\_unlic\_RF\_BS**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2017403)

**Discussion:**

The contribution summarized email discussion thread [97e][305] NR\_unlic\_RF\_BS. The email thread was moderated by Bartlomiej Golebiowski (Nokia Poland) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

Session Chair Note: Rel-16 NR BS RF core requirements have been finalized.

**Decision:** The document was **noted**.

**R4-2017461 WF on NR-U remaining BS RF core requirements**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

|  |  |  |
| --- | --- | --- |
| **GTW session on 11.4th**  **Issue 1-1: LO leakage for NR-U puncture channels**  Currently in BS specification for both band n46 and n96 there is OBUE section where there is in [ ] following sentence on LO leakage:   |  | | --- | | [An exception to the spectrum emission requirements for the non-transmitted 20 MHz channels allows a single [2] MHz bandwidth to extend to [], or [-20] dBm, whichever is the greatest. ] |   Following proposals has been made:   * Proposals   + Option 1: To keep LO exception and remove the [ ] in order to align with ETSI BRAN mask to keep previous agreements (Ericsson R4-2015725, Huawei)   + Option 2: To remove LO leakage exception requirements for NR-U BS (ZTE R4-2016124, Nokia R4-2015374, Huawei) * Recommended WF   + TBA   E///: This is from Bran-ETSI mask, not sure how we remove this now; this also exists in UE side.  Nokia: Yes, ETSI BRAN allows this exception. We prefer to remove this exception.  ZTE: Exception only allowed in UE side in NR requirements. From RF aspect, BS no needs such exception.  E///: this exception due to punctured channel.  ZTE: we are not compared to LAA, we refer to no-contiguous transmission cases in NR.  Agreement: Remove LO leakage exception requirements for NR-U BS  **Issue 1-2:** **On ΔfOBUE for band n96**  Currently in BS core specification there is TBD for **ΔfOBUE** for bands in range 900 MHz < FUL,high – FUL,low ≤ 1200 MHz. Following proposals has been made:   * Proposals   + Option 1: It is proposed to define 50 MHz ΔfOBUE for band n96 for BS type 1-C and BS type 1-H (Nokia, R4-2015372)     - Note: if this option is agreed discuss if new table should be introduced (Huawei R4-2015695)   + Option 2: No offset is needed for OBUE requirements for 900 MHz < FUL,high – FUL,low ≤ 1200 MHz, removal of offset for OBUE for band **n96** (Ericsson R4-2015725) * Recommended WF   + TBA   E///: the offset introduced for NR because of larger BW; band n96 only for US, no cat B emission requirements, then we think no need such offset.  Huawei: If we consider this band n96 is only for US, no matter offset it is, since spurious and OBUE is same; but from spec structure aspect, better to align the definition. Since this is for US with unlicensed operation, considering the new band with same frequency range in future with licenced usage, we prefer to have a separate table.  ZTE: We have same view as Huawei, better a separate table for unlicensed band.  According to FCC, the emission is -27dBm/MHz; we need to address this issue.  Nokia: We need to align the specification definition since this is essential for requirements and test we have in 3GPP RAN4.  Huawei: The boundary defined for licensed band considering covering WA BS, for unlicensed band n96, we only LA and Medium BS class; also the BS type is different.  ZTE: we should have the boundary definition since the requirement is different; we need to address the FCC requirements.  E//: The boundary defined to differentiate CAT A and CAT B; according to FCC, the requirements applied just out of band. We prefer no separate table if introduced the offset.  Nokia: For LAA BS, only support medium and LA as well and we have a common table. Not clear why we need to have to split in NR.  Even in current NR, there are some bands CAT B not applicable, we still need to have boundary. For 1C and 1H we can have separate tables.  Huawei: This NR-U operation not applicable for WA BS; meanwhile we can’t exclude the possibility for licensed operation.  Nokia: band 48 is one example band as US band.  One possible approach we still have one table, and note this is not applicable for WA BS.  ZTE: Even for Local, and Medium BS, the licensed and un-licensed operation and situation still could be different.  In LAA, we don’t have same frequency range with licensed operation.  Huawei: Similar view as ZTE. We stick to our proposal with separate table.  Nokia: We can comprise to have separate table for sake of progress.  Tentative agreement: RAN4 agree to define the ΔfOBUE for band n96. (pending on further check by E///)   * + Introduce separate table(s) for unlicensed operation band n46,n96   + The ΔfOBUE will be further discussed considering FCC requirements   ZTE: 50MHz can’t address -27dBm FCC requirements. From FCC report, the offset is 0, then we need to define guard-band in the band, not out of the band.  The same issue for boundary of in-band and out band blocking requirements since the filter will be applied.  Nokia: We should define the boundary based on 3GPP requirements, for FCC regional issue we prefer to handle separately.  ZTE: This band is used for US only; we need to address FCC requirements.  ZTE: We use the filter for TX and Rx side, from implementation aspect, we can’t decouple them.  **Issue 1-3: On ΔfOOB for band n96**  Currently in BS core specification there is TBD for **ΔfOOB** for bands in range 900 MHz < FUL,high – FUL,low ≤ 1200 MHz. Following proposals has been made:   * Proposals   + Option 1: It is proposed to define 70 MHz ΔfOOB offset for band n96 for BS type 1-C and BS type 1-H (Nokia, R4-2015372).     - Note: if this option is agreed discuss if new table should be introduced (Huawei R4-2015696).   + Option 2: TBA * Recommended WF   + TBA   RAN4 agree to introduce ΔfOOB for band n96   * + Introduce separate table(s) for unlicensed operation band n46,n96   + ΔfOOB value : further discuss considering FCC requirements impact and aims to make agreements on the value in this meeting.   Nokia: We are open to hear proposals from companies; meanwhile we need to conclude by this meeting.  Huawei: If the update the frequency offset agreed, then the value 70MHz is OK for us.  ZTE: we also provide filter data; it’s difficult to achieve FCC requirements with current channel arrangement; that’s the reason we didn’t provide the boundary values. We would like to work together with other companies to address Tx FCC requirements; then we can conclude both Tx and Rx side.  Nokia: We are discussing on Rx side, the FCC only impact Tx side.  Nokia: we use similar manner as WIFI assumption for generating filter data.  **Issue 1-4: On IBB interfering signal power level for band n96 for LA BS**  Currently in BS core specification there is [-35dBm] interfering signal for LA BS for n96.  Following proposals has been made:   * Proposals   + Option 1: for LA BS IBB interfering signal power level for band n96 should be -34dBm (ZTE, R4-2016124)   + Option 2: for LA BS IBB interfering signal power level for band n96 should be -35dBm (Nokia R4-2015373, Huawei R4-2015696,Ericsson) * Recommended WF   + TBA   ZTE: In BS receiver side, the wanted signal and interfering signal pending on NF; for band n96, NF is different compared to other bands.  Nokia: for interfering signal power is coming from simulation; for dynamic range pending on NF.  ZTE: The value for wide-area is coming from simulation; for local and medium with delta come from NF delta.  Huawei: In early phase for the local area BS interference signalling power, we also run simulation. It’s not entirely pending on REFSENS and NF.  Agreement: For LA BS IBB interfering signal power level for band n96 should be -35dBm  **Issue 1-5: On IBB interfering signal power level for band n96 for MR BS**  Currently in BS core specification there is no interfering signal for MR BS for n96.  Following proposals has been made:   * Proposals   + Option 1: for MR BS IBB interfering signal power level for band n96 should be band n96 -38 dBm. (Nokia, R4-2015373)   + Option 2: TBA * Recommended WF   + TBA   ZTE: We have to address the FCC requirements firstly, then we can conclude this for MR BS since it’s challenge for MR BS. For local area BS, it’s fine.  Need to further discuss considering FCC requirements impact.  **Issue 1-6: On OOBB requirement for band n96**  Currently in BS core specification there is note 3 in table 7.5.2-1:   |  | | --- | | NOTE 3: For band n96 Interfering Signal mean power is [-15] dBm. |   Following proposals has been made:   * Proposals   + Option 1a: for band n96 OOBB requirement interfering signal power level should be -15dBm (Nokia R4-2015373).   + Option 1b: for band n96 OOBB requirement interfering signal power level should be -15dBm and update the frequency offset (Huawei R4-2015696, ZTE, Nokia: OK to align offset with LAA) * Recommended WF   + TBA   Agreement: For band n96 OOBB requirement interfering signal power level should be -15dBm and update the frequency offset aligned with LAA.  **Issue 1-7: On Dynamic range interfering signal power level for band n96**  Currently in BS core specification there is table 7.3.2-3c where interfering signal values for Dynamic range are in brackets. Following proposals has been made:   * Proposals   + Option 1: It is proposed to align (with 1dB difference due to NF change) interfering signal levels for LA BS for band n96 and remove brackets from specification tables 7.3.2-3c (Dynamic range) (Nokia, R4-2015373, ZTE R4-2016125,Huawei)   + Option 2: TBA * Recommended WF   + TBA   Agreement: It is proposed to align (with 1dB difference due to NF change) interfering signal levels for LA BS for band n96 and remove brackets from specification tables 7.3.2-3c (Dynamic range)  **Issue 1-8: On ICS (in channel selectivity) interfering signal power level for band n96**  Currently in BS core specification there is table 7.8.2-3c where interfering signal values for ICS are in brackets. Following proposal have been made:   * Proposals   + Option 1: It is proposed to align (with 1dB difference due to NF change) interfering signal levels for LA BS for band n96 and remove brackets from specification tables 7.8.2-3c (In-channel selectivity) (Nokia, R4-2015373, ZTE R4-2016125,Huawei)   + Option 2: TBA * Recommended WF   + TBA   Agreement: It is proposed to align (with 1dB difference due to NF change) interfering signal levels for LA BS for band n96 and remove brackets from specification tables 7.8.2-3c.  **Issue 2-1: On AFC for band n96**  Currently in BS core specification there is no limitation in terms of AFC or band n96 specific limitations. Following proposal have been made.   * Proposals   + Option 1: Further discuss how to apply the FCC requirements and AFC or non-AFC policy for the carriers across U-NII bands (ZTE R4-2016124)   + Option 2: It is proposed that AFC aspects are out of scope of 3GPP specifications. (Nokia, Ericsson, Charter Communications Inc., Qualcomm, CableLabs, Apple (including comments from thread [106] issue 4-1) * Recommended WF   + TBA   Nokia: we can add note for medium BS.  Aligned with the conclusion in NR-U system parameter decision on AFC aspects.  **Issue 2-2: On band n96 restrictions**   * Proposals   + Option 1: It is proposed to restrict the entire band to indoor only deployment or further discuss the channel arrangement for upper edge of 6GHz bands to meet the required emission limits. (ZTE R4-2016124)   + Option 2: It is proposed to introduce Medium Range BS according to FCC regulation. (Nokia, Ericsson) * Recommended WF   + TBA   Agreement: It is proposed to introduce Medium Range BS according to FCC regulation based on the further discussion on FFC requirements impact. |

**Decision:** The document was **approved**.

**R4-2015371 CR to TS 38.104 with NR-U remaining open issues updates**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0247 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces updates to NR-U, removes brackets, introduce requirments for remaining open issues.

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **revised to R4-2017462**.

**R4-2017462 CR to TS 38.104 with NR-U remaining open issues updates**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0247 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015371)

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **agreed**.

**R4-2015372 On band n96 remaining issues**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution discuss open issues for band n96.

Proposal 1: It is proposed to removed brackets for NR-ARFCN for band n96 in table 5.4.2.3-1 in Note 2 in TS 38.104 (BS core spec)

Proposal 2: It is proposed to removed brackets for GSCN for band n96 in Note 6 in table 5.4.3.3-1 of TS 38.104.

Proposal 3. It is proposed to introduce Medium Range BS for band n96.

Proposal 4: It is proposed to define 50 MHz ΔfOBUE for band n96 for BS type 1-C and BS type 1-H.

Proposal 5: It is proposed to define 70 MHz ΔfOOB offset for band n96 for BS type 1-C and BS type 1-H.

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **noted**.

**R4-2015698 CR for TS 38.104: Corrections for NR-U**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0254 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

To solve the remaining open issues for NR-U BS

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **not pursued**.

**R4-2016124 Discussions on remaining issue of NR-U BS RF requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Abstract:**

Proposal 1: further discuss how to apply the FCC requirements and AFC or non-AFC policy for the carriers across U-NII bands;

Proposal 2: for LA BS IBB/OOBB requirements for n96, IBB interfering signal power level should be -34dBm and OOBB requirement should be -15dBm;

Observation 1: it is very challenging to achieve the required attenuation for lower edge and upper edge of 6GHz assuming -27dBm/MHz emission limit needed out of 6GHz band in FCC report.

Proposal 3 : to remove LO leakage exception requirements for NR-U BS.

Proposal 4: to restrict the entire band to indoor only deployment or further discuss the channel arrangement for upper edge of 6GHz bands to meet the required emission limits.

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **noted**.

**R4-2016125 CR to 38.104: Corrections on NR-U BS RF requirements**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0259 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

Some of NR-U BS RF requirements is not correct and therefore some further corrections are needed.

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **not pursued**.

**R4-2016188 CR to 36.104: Introduction of n96 medium range requirements**

*Type: CR For: Agreement  
 36.104 v16.7.0 CR-4917 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction of n96 medium range requirements.

**Discussion:**

The secretary wondered what is the correct Release? It reads Rel-17 on the coversheet but the CR is allocated for Rel-16. See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **revised to R4-2017463**.

**R4-2017463 CR to 36.104: Introduction of n96 medium range requirements**

*Type: CR For: Agreement  
 36.104 v16.7.0 CR-4917 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016188)

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **agreed**.

**R4-2016189 CR to 37.104: Introduction of n96 medium range requirements**

*Type: CR For: Agreement  
 37.104 v16.7.0 CR-0915 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction of n96 medium range requirements.

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **agreed**.

**R4-2016190 CR to 37.105: Introduction of n96 medium range requirements**

*Type: CR For: Agreement  
 37.105 v16.5.0 CR-0207 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction of n96 medium range requirements.

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **agreed**.

##### 7.1.4.2 Transmitter characteristics [NR\_unlic-Core]

**R4-2015374 BS OBUE mask for NR-U**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribtion discusses OBUE mask details for NR-U.

Proposal: It is proposed to remove LO leakage exception requirements for NR-U BS OBUE.

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **noted**.

**R4-2015695 On remaining issues for BS TX**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: It is proposed to define the boundary between OBUE and spurious emission in a separate Table for NR-U n46 and n96.

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **noted**.

**R4-2015725 Discussion on remaining NR-U BS RF Requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

During last RAN4 meeting, RAN4 #96-e, some proponent companies brought forward open issues relating to NR-U BS requirements which needed further discussion. In-band / Out of band boundary and requirement. LO leakage for NR-U punctured channels.

Proposal: Align both NR-U 1-C and NR-U 1-O OBUE and OOBB offsets to NR for n46

Proposal: No offset is needed for OOB and OBUE requirements, removal of offset for OBUE and OOB

Proposal: Remove the [ ] in order to align with ETSI BRAN mask as previous agreement states

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **noted**.

**R4-2015726 CR to TS 38.104: Removal of**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0255 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Frequency offset for OBUE is not needed.

Further explianation is detailed in R4-2015725

Only NR-U (n96) contains operating band larger than 900 MHz. However, n96 is only applicable in the USA only subject to FCC Report and Order [FCC 20-51]”. The offset is not required for USA region, as there is no category B emissions requirement.

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **not pursued**.

##### 7.1.4.3 Receiver characteristics [NR\_unlic-Core]

**R4-2015373 On interfering signals for NR-U Rx requirements**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution discuss interfering signal levels.

Proposal 1: It is proposed to align (with 1dB difference due to NF change) interfering signal levels for LA BS for band n96 and remove brackets from specification tables 7.3.2-3c (Dynamic range) and 7.8.2-3c (In-channel selectivity).

Proposal 2: It is proposed to define interfering signal levels for n96 MR BS for dynamic range and in-channel selectivity with 1dB adjustment due to NF change.

Proposal 3: It is proposed to define -15 dBm interfering signal power for out-of-band blocking requirement for band n96.

Proposal 4. It is proposed to remove brackets for LA BS interfering signal for general blocking requirements and define requirement with interfering signal power of -35 dBm.

Proposal 5. It is proposed to reuse legacy NR FR1 interfering signal for MR BS for band n96 of -38 dBm.

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **noted**.

**R4-2015696 On remaining issues for BS RX**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: It is proposed to define the boundary between in-band blocking and out of band blocking in a separate Table for NR-U n46 and n96.

Proposal 2: For NR-U n46 and n96, -35 dBm CW interfering signal applies to the frequency range of ΔfOOB to 500 MHz outside the band edge.

**Discussion:**

See email discussion summary for [97e][305] NR\_unlic\_RF\_BS in R4-2017403.

**Decision:** The document was **noted**.

#### 7.1.5 BS conformance testing [NR\_unlic-Perf]

##### 7.1.5.1 General [NR\_unlic-Perf]

**R4-2017404 Email discussion summary for [97e][306] NR\_unlic\_RF\_Conformance**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

**Discussion:**

The contribution summarized email discussion thread [97e][306] NR\_unlic\_RF\_Conformance. The email thread was moderated by Xue Fei (ZTE) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017609**.

**R4-2017609 Email discussion summary for [97e][306] NR\_unlic\_RF\_Conformance**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

(Replaces R4-2017404)

**Discussion:**

The contribution summarized email discussion thread [97e][306] NR\_unlic\_RF\_Conformance. The email thread was moderated by Xue Fei (ZTE) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017464 WF on work plan and working split for NR-U BS conformance testing**

*Type: other For: discussion  
 Source: ZTE*

**Discussion:**

See email discussion summary for [97e][306] NR\_unlic\_RF\_Conformance in R4-2017404.

**Decision:** The document was **approved**.

**R4-2015384 Discussion on NR-U BS RF conformance tests**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Proposal 1: It is proposed to split responsibility for drafting big CRs to given BS test specification between interested companies.

Proposal 2: Companies responsible for drafting big CRs should provide changes required to specification for RAN4#98-e meeting.

Proposal 3: Companies are encouraged to provide their views on above mentioned test requirements and test tolerances to be applicable up to 7125 MHz.

**Discussion:**

See email discussion summary for [97e][306] NR\_unlic\_RF\_Conformance in R4-2017404.

**Decision:** The document was **noted**.

**R4-2016126 CR to TS 38.141-1: introduction of NR-U into TS 38.141-1**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0165 Cat: B (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

NR-U BS conformance testing requirement is provided and therefore the corresponding requirements should be specified.

**Discussion:**

See email discussion summary for [97e][306] NR\_unlic\_RF\_Conformance in R4-2017404.

**Decision:** The document was **not pursued**.

##### 7.1.5.2 Transmitter characteristics [NR\_unlic-Perf]

**R4-2015383 Draft CR to TS 37.107 With NR-U intorduction for perfromance part**

*Type: draftCR For: Endorsement  
 37.107 v16.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This is draft CR to TS 37.107 with updates related to NR-U introduction for perfromance part.

The aim of this CR is to collect companies views and comments on proposed updates.

**Discussion:**

See email discussion summary for [97e][306] NR\_unlic\_RF\_Conformance in R4-2017404.

**Decision:** The document was **not pursued**.

##### 7.1.5.3 Receiver characteristics [NR\_unlic-Perf]

#### 7.1.6 RRM core requirements maintenance (38.133) [NR\_unlic-Core]

**R4-2017004 Email discussion summary for [97e][205] NR\_unlic\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][205] NR\_unlic\_RRM\_1. The email thread was moderated by Iana Siomina (Ericsson-LG Co., LTD) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017275**.

**R4-2017275 Email discussion summary for [97e][205] NR\_unlic\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2017004)

**Discussion:**

The contribution summarized email discussion thread [97e][205] NR\_unlic\_RRM\_1. The email thread was moderated by Iana Siomina (Ericsson-LG Co., LTD) and treated during RRM session chaired by Andrey Chervyakov (Intel).

GTW session (November 03, 2020)

|  |
| --- |
| Topic #1: General (AI 7.1.6.1)   * Sub-topic 1-2: Number of candidate SSBs for cell detection   + Issue 1-2-1: Number of candidate SSBs for cell detection     - Option 1 (Nokia, R4-2015387 in AI 7.1.6.10): For cell detection, UE is required to monitor at least the same number of candidate SSB positions as in other RRM measurements.     - Option 2 (Huawei/HiSilicon, Apple [R4-2014283 in AI 7.1.6.11], Qualcomm [R4-2016564 in AI 7.1.6.10]): For cell detection the requirements are defined under assumption that UE monitors at least 1 candidate SSB position in one SSB block burst.   Discussion:  E///: We can agree with Option 2. Need to add a clarification “One candidate position for detection should not be impacted by what UE is already monitoring”  Nokia: can compromise to Option 2.  Chair: please further discuss how to capture the agreement in the CR.  Agreement:   * + For cell detection the requirements are defined under assumption that UE monitors at least 1 candidate SSB position in one SSB block burst.     - Note: 1 candidate SSB position for detection should not be impacted by what UE is already monitoring * Sub-topic 1-3: Exact candidate SSB positions   + Issue 1-3-1: Exact candidate SSB positions     - Option 1: no need to fix     - Option 2 (Huawei/HiSilicon): The exact candidate SSB positions that UE is required to monitor shall be further clarified.   Discussion:  HW: last meeting we agreed that UE to monitor 2 SSB positions. In case UE does not read PBCH then how does UE know which exactly positions to monitor?  Nokia: UE needs to know the index only and does not need to read PBCH. Do not see the need to fix it.  E///: agree with Nokia. UE can know the time separation between SSBs  QC: agree with Nokia and E///. UE has information.  HW: is PBCH reading considered?  Nokia: No need to read PBCH to derive SSB index. By knowing Q the UE can derive the SSB candidate position corresponding to SSB index.  HW: there is some difference for NR-U which has 10 SSB positions and 1 bit is included in PBCH. Without PBCH decoding UE may not differentiate SSB positions since DMRS sequences are same for 0 and 8. Sometimes UE needs to monitor only 1 position.  E///: No need to decode PBCH. UE knows the separation between the two (e.g. 0 and 4 or 1 and 5).  Apple: agree with HW. Sometimes PBCH reading is needed. There may be ambiguity on the SSB index.  MTK: PBCH reading is not required. Why is UE required to know the exact position?  Apple: it depends on SMTC window configuration as well. SMTC window may not cover the whole SSB burst  Nokia: this is a corner case. We can add a clarification that SMTC covers the entire SSB burst  Apple: fine with us  E///: do not see the need  HW: example – UE detects SSB 8. Is UE required to measure 0 and 4 or can keep measuring 8?  E///: If UE is already measuring 4 then UE needs to measure 4 and 8. If it is already measuring 0 then it exceeds UE capabilities and it is up to UE what to do.  HW: what about newly detectable cell with SSB 8?  E///: UE will keep measuring 8. Keep detecting other positions. Once a QCL’ed SSB beam is detected on the other position then it is up to UE capabilities.  Agreement: Do not fix exact SSB positions for cell detection   * Sub-topic 1-4: Set of candidate SSB positions in RRM requirements   + Issue 1-4-1: Further clarification on the set of candidate SSB positions     - Option 1 (Apple, R4-2014283 in AI 7.1.6.11): Except cell detection, RRM core requirements are defined under assumption what UE monitors the first 2 successive QCL’ed candidate SSB positions (i.e. N1 = N2 = 2). For a certain SSB index which has only one single candidate SSB position in the SSB burst, UE monitors 1 candidate SSB position for this SSB in one SSB burst.     - Option 2: no need to further clarify   Discussion:  QC: this clarification is redundant. UE already knows that.  Apple: current requirements say that UE needs to monitor the first two QCL’ed positions. Technically it does not work for some SSBs.  QC: suggest to revise as follows “For a certain SSB index which has only one ~~single~~ configured candidate SSB position in the SSB burst, UE monitors 1 candidate SSB position for this SSB in one SSB burst.”  Agreement: Except cell detection, RRM core requirements are defined under assumption what UE monitors the first 2 successive QCL’ed candidate SSB positions (i.e. N1 = N2 = 2). For a certain SSB index which has only one configured candidate SSB position in the SSB burst, UE monitors 1 candidate SSB position for this SSB in one SSB burst.  Topic #4: RRC connection mobility control (AI 7.1.6.4)   * Sub-topic 4-2: Random Access requirements   + Issue 4-2-1: RA requirements in TS 38.133 – general     - Proposal 1 (Nokia): RAN4 to create a new clause in TS 38.133, 6.2.2A, which is based on 6.2.2, but has adapted content in clauses that describe the correct behaviour when transmitting signals, clarifying that transmissions are only possible if the UL CCA is successful.   Discussion:  E///: We are fine. We can wait till the next meeting. In this meeting we can identify all possible impacts first.  QC: Agree with E///.  Nokia: We are fine to wait. The impact on other sections was already considered.   * + Issue 4-2-2: RA requirements in TS 38.133 – 4-step RA type     - Proposal 1 (Nokia): For the 4-step RA type, agree on the clauses and proposed modifications considering the NR random access requirements baseline as described in Table 1.   + Issue 4-2-3: RA requirements in TS 38.133 – 2-step RA type     - Proposal 1 (Nokia): For the 2-step RA type, agree on the clauses and proposed modifications considering the NR random access requirements baseline as described in Table 2.   Discussion:  Apple: 2step RA is Rel-16 feature and should not be mixed with NR-U  Nokia: RAN2 agreed 2-step RACH is supported for NR-U  Topic #5: SCell activation/deactivation (delay and interruption) (AI 7.1.6.5)   * Sub-topic 5-1: Interruptions for inter-band CA   + Issue 5-1-1: Interruption for inter-band CA     - Proposal 1 (ZTE, Ericsson, Qualcomm): For inter-band CA, the interruption is not the same as for intra-band case and a single interruption applies.     - Proposal 2 (Huawei/HiSilicon): For inter-band CA when there is at least one active serving Cell in the band where the SCell is being activated, it will cause two interruption windows for each AGC failure.   Discussion:  MTK: see the benefit of proposal 2 to save power but it will cause more interruptions. No strong preference.  HW: It depends whether there is already activated SCell  Agreement:  For inter-band CA,   * + - For the case when there is no already activated SCell, a single interruption applies.     - For the case when there is already activated SCell, interruption is FFS. * Sub-topic 5-2: Interruptions for intra-band CA   + Issue 5-2-1: Interruption length for intra-band CA     - Proposal 1 (Huawei/HiSilicon): For the interruptions to the serving cells in the same band, whether to include the addition RF tuning should be further discussed.   Discussion:  QC: RF retuning should be done only once  HW: we already agreed on the total number of interruptions. We are talking about the length of the interruption. Should UE always keep the RF open?  QC: it is up to UE and this is a trade-off between power saving and throughput. Prefer to minimize the impact on throughput.   * Sub-topic 5-4: Measuring CSI-RS during SCell activation   + Issue 5-4-1: Conditions for measuring CSI-RS during SCell activation     - Proposal 1 (Apple): UE always attempts to measure P/SP CSI-RS for CSI reporting during the activation period regardless of the configuration of CO-DurationPerCell-r16, SlotFormatIndicator, or CSI-RS-ValidationWith-DCI-r16. No need to consider the requirement applicability associated with the configuration of CO-DurationPerCell-r16, SlotFormatIndicator, or CSI-RS-ValidationWith-DCI-r16.   Discussion:  MTK: We cannot simply remove the sentence and need some clarifications. What is UE behavior in case of LBT failure?  HW: Generally, agree with Apple. The requirements shall not depend on configuration of CO duration. Meantime we share MTK concerns.  Apple: UE will directly measure without any detection. In case of LBT failure the UE will report out of range.  MTK: do not see the problem with DCI decoding.  Apple: we have different understanding. UE is not required to monitor the DCI for the de-activated SCell. All RAN1 mechanisms for validation are applied for activated carriers.  MTK: UE is not required to make DCI decoding on de-activated SCell. However after fine time tracking has completed UE should be able to decode DCI and make CSI report. UE can do DCI decoding before it sends the CSI report.  Apple: the ending point of SCell activation is the moment when UE sends the CSI report. The network shall know that UE has been activated before it can send DCI (hand-shake procedure). We can also send LS to RAN1 to clarify.  MTK: will need to check internally.  Chair: continue discussion. Send LS to RAN1 if further clarifications on RAN1 assumptions are needed.   * Sub-topic 5-5: SCell activation/deactivation when *sCellDeactivationTimer* is NOT configured   + Issue 5-5-1: Applicability of SCell activation requirements when *sCellDeactivationTimer* is NOT configured     - Option 1 (Qualcomm, Ericsson): The SCell activation requirements for NR-U do not apply when the *sCellDeactivationTimer* is not configured.       * Observation (Ericsson): When sCellDeactivationTimer is not configured, the UE may get stuck in one of the phases (in DL or UL) of the sCell activation procedure until the network realizes this, without being able to stop the procedure or to move to another phase of the SCell activation procedure. Smarter UEs may not be able meet the current requirements.     - Option 2 (Nokia): In NR-U, the SCell activation delay requirement applies regardless of the *sCellDeactivationTimer* being configured or not. Remove the editor’s notes in clause 8.3A.2 in TS 38.133 corresponding to the applicability of the requirements and UE behaviour when the *sCellDeactivationTimer* is not configured.   Discussion:  E///: requirements shall not apply. Otherwise UE may get stuck in DL or UL.  HW: Agree with E///.  Nokia: The timer is optional. When the timer is not configured the requirements shall be considered.  E///: the proposal does not mandate the timer  Nokia: the problem of LBT failures is already addressed in the requirements. The problem of LBT is not relevant to timer/no timer issue.  HW: LBT is considered in SCell activation only partially. It is not considered for HARQ. UE may not be able to terminate the procedure itself.  Nokia: If there are some issues with procedures then we should ask RAN2 to fix it. There are multiple scenarios and the issues are relevant to some of them only.  Chair: continue discussion. Aim to identify scenario where “no timer” requirements may work. Consider to send LS to RAN2 if needed in case issues with procedure are identified.   * Sub-topic 5-6: SCell activation/deactivation when *sCellDeactivationTimer* IS configured   + Issue 5-6-1: UE behaviour with respect to the timer when *sCellDeactivationTimer* IS configured     - Option 1 (Huawei/HiSilicon): If RAN4 is to define requirements only when *sCellDeactivationTimer* is configured, necessary clarification is needed that UE shall not stop *sCellDeactivationTimer* before UE successfully transmits the HARQ feedback for the deactivation command when *sCellDeactivationTimer* has not expired.     - Option 2 (Qualcomm): No such clarification is needed, even if the requirements apply only when *sCellDeactivationTimer* is configured   Discussion:  E///: support Option 2.  Nokia: No such clarification is needed. This is already described in RAN2 specs.  HW: we are fine to send LS to RAN2. RAN2 is not aware on the issue.  Apple: we agree with Huawei observation.  Chair: further discuss the technical issue raised by Huawei. Consider to send LS to RAN2 to fix the issue if there is consensus  Topic #6: Active TCI state switching (AI 7.1.6.6)   * Sub-topic 6-1: Enhancements in Rel-17   + Issue 6-1-1: TCI state switching enhancements in Rel-17     - Proposal 1 (ZTE): Do not introduce enhancement into R16 specifications. Further study how to handle TCI state switching failures in R17.   Discussion:  E///: this should be discussed separately. Further enhancements should be discussed separately (not in this WI).  ZTE: we are ok to have a separate discussion in the plenary/  Topic #9: Beam management (AI 7.1.6.9)   * Sub-topic 9-1: L1-RSRP   + Issue 9-1-2: UE behavior when UE cannot transmit HARQ-ACK for MAC-CE deactivation of semi-persistent CSI reporting     - Proposal 1 (Nokia): RAN4 to wait for the reply LS from RAN1 on the UE behaviour when the transmission of HARQ-ACK for MAC CE deactivation for semi-persistent CSI reporting is blocked by UL LBT failure.     - Proposal 2 (Ericsson): RAN4 should wait for LS response from RAN1 on the UE behavior when UE cannot transmit HARQ-ACK for MAC CE deactivation for semi-persistent CSI reporting. Once RAN4 receives the LS response from RAN1, RAN4 should restart the discussion and capture the UE behavior in TS38.133 if necessary.     - Proposal 3 (ZTE, R4-2014012 in AI 7.1.6.10): If UE cannot transmit HARQ-ACK on MAC-CE deactivation due to UL CCA failure, UE continues to be in its previous state, i.e., it should measure and report L1-RSRP until it successfully transmits HARQ-ACK.     - Proposal 4 (Qualcomm, R4-2016564 in AI 7.1.6.10): At least from MAC (RAN2) layer perspective, UE follows the actions related to MAC-CE activation/deactivation command immediately after decoding the MAC-CE command regardless of whether UE is able to send HARQ-ACK feedback or not.   Discussion:  E///: wait for RAN1 LS response  Chair: wait for RAN1 LS response |

1st round email discussion conclusions

**Topic #1: General (AI 7.1.6.1)**

**Topic #4: RRC connection mobility control (AI 7.1.6.4)**

Issue 4-1-1: Cell search delay for unknown intra-frequency cell

Agreement

* The cell search delay for unknown intra-frequency cell when serving cell SSB Ês/Iot < -8 dB is (800+ 20 x K1).

Issue 4-1-2: Cell search delay for unknown inter-frequency cell

Agreement

* The cell search delay for unknown inter-frequency cell when serving cell SSB Ês/Iot < -8 dB is (800+ 20 x K2,i).

**Topic #5: SCell activation/deactivation (delay and interruption) (AI 7.1.6.5)**

Issue 5-2-3: The interruption window location for intra-band CA

Agreement

* + For intra-band CA, the starting point of an interruption window on SpCell or any activated SCell as specified in clause 8.2, shall not occur before slot n+1+ and not occur after slot n+1+ , where TX is:



* + TFirstSSB , for known SCell activation when SCell measurement cycle is equal to, or smaller than, 160ms
  + TFirstSSB\_MAX + L2,1\* TSMTC-MAX , for known SCell activation when SCell measurement cycle is greater than 160ms
  + TFirstSSB\_MAX + L3,1\* TSMTC-MAX , for unknown SCell activation.

**Topic #6: Active TCI state switching (AI 7.1.6.6)**

**Topic #8: RLM (AI 7.1.6.8)**

**Topic #9: Beam management (AI 7.1.6.9)**

Issue 9-1-1: A new clause for L1-RSRP reporting under CCA in TS 38.133

Agreement:Introduce new clause 9.5A in TS38.133 for L1-RSRP reporting under CCA.

Issue 9-1-2: UE behavior when UE cannot transmit HARQ-ACK for MAC-CE deactivation of semi-persistent CSI reporting

Agreement:

* RAN4 should wait for LS response from RAN1 on the UE behavior when UE cannot transmit HARQ-ACK for MAC CE deactivation for semi-persistent CSI reporting due to UL LBT failure.
* Once RAN4 receives the LS response from RAN1, RAN4 should resume the discussion and capture the UE behavior in TS 38.133 if necessary.

**Topic #10: Measurement requirements (AI 7.1.6.10)**

Issue 10-1-2: Scheduling restrictions – clarification in TS 38.133

Agreement:

* Add clarification for UL scheduling restriction as “The UE is not expected to transmit PUCCH/PUSCH/SRS on the UL symbols which are overlapping in time with the RSSI measurement symbols configured by RMTC”.

Issue 10-2-2: Scheduling restrictions for inter-band CA

Agreement:

* In FR1 inter-band CA, the scheduling restriction due to one CC shall not apply to other CCs on the other bands.

**Topic #11: Measurement capability and reporting criteria (AI 7.1.6.11)**

**Topic #12: Timing (AI 7.1.6.12)**

**Topic #13: Other requirements (AI 7.1.6.13)**

GTW session (November 11, 2020)

**Topic #5: SCell activation/deactivation (delay and interruption) (AI 7.1.6.5)**

* Issue 5-1-1: Interruption for inter-band CA
  + - 1st GTW agreement

*For inter-band CA,*

* + - * *For the case when there is no already activated SCell, a single interruption applies.*
      * *For the case when there is already activated SCell, interruption is FFS.*
    - Discussion
      * HW: 2 interruption for the case of already activated SCell
      * QC: Activated SCell case does not apply to inter-band CA case. Victim cell is always intra-band case.
      * MTK: Do not agree with Huawei comments.
      * Apple: number of interruptions does not depend on whether it is intra-band or inter-band. The difference is the duration.
      * QC: Alternative proposal: “Single interruption will apply when there is no already activated SCell in the same band where SCell is being activated”
      * Chair: continue discussion
* Issue 5-5-1: Applicability of SCell activation requirements when *sCellDeactivationTimer* is NOT configured
  + Proposals
    - Option 1 (Qualcomm, Ericsson): The SCell activation requirements for NR-U do not apply when the sCellDeactivationTimer is not configured.
      * Observation (Ericsson): When sCellDeactivationTimer is not configured, the UE may get stuck in one of the phases (in DL or UL) of the sCell activation procedure until the network realizes this, without being able to stop the procedure or to move to another phase of the SCell activation procedure. Smarter UEs may not be able meet the current requirements.
    - Option 2 (Nokia): In NR-U, the SCell activation delay requirement applies regardless of the sCellDeactivationTimer being configured or not. Remove the editor’s notes in clause 8.3A.2 in TS 38.133 corresponding to the applicability of the requirements and UE behaviour when the sCellDeactivationTimer is not configured.
  + Discussion
    - Nokia: not ready to agree. Can send LS to RAN2
    - E///: what is the question to RAN2?
    - Nokia: need to inform RAN2 that we see the problem. Ok to draft LS.
    - QC: RAN2 might not be able to resolve it.
    - MTK: Agree with Nokia that RAN2 can address the problem on UE behavior for the case time is not configured.
    - E///: LS shall be phrased in a way that RAN4 is planning not to define the requirements for the case sCellDeactivationTime is not configured.
      * Nokia: disagree with such approach
    - Chair: Nokia to prepare possible draft LS to RAN2

**Decision:** The document was **noted**.

**R4-2017080 WF on NR-U RRM core requirements**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **approved**.

**R4-2017083 LS on measuring CSI-RS during SCell activation.**

*Type: LS out For: Approval  
 to RAN1  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **revised to R4-2017381**.

**R4-2017381 LS on measuring CSI-RS during SCell activation.**

*Type: LS out For: Approval  
 to RAN1  
 Source: RAN4*

(Replaces R4-2017083)

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **approved**.

**R4-2017333 LS on SCell activation/deactivation when sCellDeactivationTimer is not configured**

*Type: LS out For: Approval  
 to RAN2  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **revised to R4-2017382**.

**R4-2017382 LS on SCell activation/deactivation when sCellDeactivationTimer is not configured**

*Type: LS out For: Approval  
 to RAN2  
 Source: Nokia*

(Replaces R4-2017333)

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

##### 7.1.6.1 General [NR\_unlic-Core]

**R4-2014867 Discussion on clarification for NR-U RRM requirements with DRX in use**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Abstract:**

Proposal 1: For the requirements with DRX in use, to add notes “X is the number of DRX cycles with at least one SMTC where there are no SSBs available at the UE during … period when DRX is used”, where

• X shall be replaced depending on the requirement with:

• RLM-RS SSB in RLM requirements,

• CBD-RS SSB in CBD requirements,

• SSB in L1-RSRP measurement requirements,

• SMTC in measurement requirements other than RSSI requirements and L1-RSRP,

• and … shall be replaced with what is appropriate:

• evaluation,

• detection,

• identification,

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2014868 Clarification for NR-U RRM requirements with DRX in use**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1210 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

If DRX is in use, NR-U RRM requirements are unclear when LBT failures occur. The current clarification notes are for no DRX scenarios but not for the cases with DRX in use.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **not pursued**.

**R4-2015515 Discussion on monitoring capability in cell detection for NR-U**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: For cell detection the requirements are defined under assumption that UE monitors at least 1 candidate SSB position in one SSB block burst.

Proposal 2: The exact candidate SSB positions that UE is required to monitor shall be further clarified.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2016408 On the terminology and SSB monitoring in NR-U**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On the terminology and SSB monitoring in NR-U.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2016409 Terminology updates for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1384 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

RAN4 agreed on the definition of SMTC/SSB not available at the UE and the signal/channel occasion unavailable for UE transmission, which need to be captured in the specification

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **revised to R4-2017081**.

**R4-2017081 Terminology updates for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1384 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016409)

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **agreed**.

**R4-2016410 Terminology updates for NR-U**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6999 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

RAN4 agreed on the definition of SMTC/SSB not available at the UE and the signal/channel occasion unavailable for UE transmission, which need to be captured in the specification

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **revised to R4-2017082**.

**R4-2017082 Terminology updates for NR-U**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6999 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016410)

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **agreed**.

##### 7.1.6.2 Cell re-selection [NR\_unlic-Core]

##### 7.1.6.3 Handover [NR\_unlic-Core]

##### 7.1.6.4 RRC connection mobility control [NR\_unlic-Core]

**R4-2015202 CR to 38.133 - Introducing NR-U random access requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1244 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction of NR-U random access requirements in TS 38.133.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **postponed**.

**R4-2015386 NR-U Random access**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discusses the random access requirements in NR-U, both with 4 step RA and 2 step RA types.

Proposal 1: RAN4 to create a new clause in TS 38.133, 6.2.2A, which is based on 6.2.2, but has adapted content in clauses that describe the correct behaviour when transmitting signals, clarifying that transmissions are only possible if the UL CCA is successful.

Proposal 2: For the 4-step RA type, agree on the clauses and proposed modifications considering the NR random access requirements baseline as described in Table 1.

Proposal 3: For the 2-step RA type, agree on the clauses and proposed modifications considering the NR random access requirements baseline as described in Table 2.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2016175 Analysis of requirements for known cell in RRC re-establishment with CCA**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The cell search requirement when Es/Iot < -8 dB is still TBD for unknown cell.

Observation 1: When the serving cell SSB Ês/Iot < -8 dB, the UE typically searches unknown cell once every 20 ms.

Proposal 1: The cell search delay for unknown intra-frequency cell when serving cell SSB Ês/Iot < -8 dB is (800+ 20 x K1 )

Proposal 2: The cell search delay for unknown inter-frequency cell when serving cell SSB Ês/Iot < -8 dB is (800+ 20 x K2,i)

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2016176 Requirements for known cell in RRC re-establishment with CCA**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1369 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Cell identification delay for unknown cell with CCA when serving cell Es/Iot < -8 dB is TBD

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **agreed**.

##### 7.1.6.5 SCell activation/deactivation (delay and interruption) [NR\_unlic-Core]

**R4-2014013 Remaining issues on SCell activation in NR-U**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

Proposal 1: For inter-band CA, the interruption is not the same as for intra-band case and a single interruption applies.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2014284 On SCell activation requirement for NR-U**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Apple*

**Abstract:**

Proposal: UE always attempts to measure P/SP CSI-RS for CSI reporting during the activation period regardless of the configuration of CO-DurationPerCell-r16, SlotFormatIndicator, or CSI-RS-ValidationWith-DCI-r16. No need to consider the requirement applicability associated with the configuration of CO-DurationPerCell-r16, SlotFormatIndicator, or CSI-RS-ValidationWith-DCI-r16.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2014285 Draft CR on SCell activation requirement for NR-U**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **withdrawn**.

**R4-2015203 CR to 38.133 - NR-U SCell activation and deactivation requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1245 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Remove editor notes related to applicability of requirements when the sCellDeactivationTimer is not configured in NR-U, clarifying that the requirements are also applicable when the timer is not configured.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **merged**.

**R4-2015385 Scell activation and deactivation delay requirements in NR-U**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discusses the FFS points in the scell activation and deactivation delay requirements in NR-U.

Proposal 1: In NR-U, the sCell activation delay requirement applies regardless of the sCellDeactivationTimer being configured or not.

Proposal 2: Remove the editor’s notes in clause 8.3A.2 in TS 38.133 corresponding to the applicability of the requirements and UE behaviour when the sCellDeactivationTimer is not configured.

Proposal 3: In NR-U, the sCell deactivation delay requirement applies regardless of the sCellDeactivationTimer being configured or not.

Proposal 4: Remove the editor’s notes in clause 8.3A.3 in TS 38.133 corresponding to the applicability of the requirements and UE behaviour when the sCellDeactivationTimer is not configured.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2015516 CR on SCell activation and deactivation requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1287 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The interruption windows cased by SCell activation for an unknown SCell shall be 2+L3,1, which is not correctly defined in the existing requirements.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **merged**.

**R4-2015517 Discussion on SCell activation and deactivation requirements for NR-U**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: For inter-band CA when there is at least one active serving Cell in the band where the SCell is being activated, it will cause two interruption windows for each AGC failure.

Proposal 2: For the interruptions to the serving cells in the same band, whether to include the addition RF tuning should be further discussed.

Proposal 3: When there is no active serving Cell in the band where the SCell is being activated, whether to consider the additional RF tuning should be further discussed.

Proposal 4: If RAN4 is to define requirements only when sCellDeactivationTimer is configured, necessary clarification is needed that UE shall not stop sCellDeactivationTimer before UE successfully transmits the HARQ feedback for the deactivation command when sCellDeactivationTimer has not expired.

Proposal 5: For intra-band CA, while the SCell being activated is known or unknown with measurement cycle greater than 160ms, up to 1+L interruption windows are allowed during SCell activation, where L = L2,1 for known SCell and L = 1+L3,1 for unknown SCell. For a single interruption (L=0), interruption window length at SCell activation does not depend on DL CCA failures.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2016411 On remaining issues for SCell activation in NR-U**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On remaining issues for SCell activation in NR-U.

Proposal 1: For inter-band CA, the interruption is not the same as for intra-band case and a single interruption applies.

Proposal 2: The SCell activation requirements for NR-U do not apply when the sCellDeactivationTimer is not configured.

Proposal 3: The SCell deactivation requirements for NR-U do not apply when the sCellDeactivationTimer is not configured.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2016412 Updates in SCell activation in NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1385 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Editor’s notes are remaining in SCell activation requirements

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **merged**.

**R4-2016565 Remaining Issues On SCell activation and deactivation requirements in NR-U**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

In this paper, we discuss the remaining issues on Scell activation and deactivation requirements in NR-U.

Proposal 1. For inter-band CA, a single interruption window is allowed during the Scell activation

Proposal 2. For intra-band CA, while the SCell being activated is known with measurement cycle <160ms, a single interruption window is allowed during SCell activation

Proposal 5. The SCell activation requirements for NR-U do not apply when the sCellDeactivationTimer is not configured.

Proposal 6a. No new specification is needed for SCell deactivation requirements when SCellDeactivationTimer is not configured.

Proposal 6b. The SCell deactivation requirements for NR-U do not apply when the SCellDeactivationTimer is not configured.

Proposal 7. No such clarification is needed, even if the requirements apply only when sCellDeactivationTimer is configured

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2016591 Interruption windows and applicability of Scell activation/deactivation requirements for SCells operating with CCA**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1403 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

The CR updates clause 8.3A based on agreements related to interruption windows and applicability of Scell activation/deactivation requirements.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **revised to R4-2017084**.

**R4-2017084 Interruption windows and applicability of Scell activation/deactivation requirements for SCells operating with CCA**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1403 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2016591)

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **agreed**.

##### 7.1.6.6 Active TCI state switching [NR\_unlic-Core]

**R4-2014190 On TCI state switching failure in NR-U**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

Proposal 1: Do not introduce enhancement into R16 specifications. Further study how to handle TCI state switching failures in R17.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2015518 CR on TCI state switching requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1288 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

According to the agreed CR R4-2012239, the L1-RSRP is not needed in FR1 which is for Rx beam refinement. Therefore, the corresponding requirements related to L1-RSRP is not needed for NR-U.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **revised to R4-2017085**.

**R4-2017085 CR on TCI state switching requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1288 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015518)

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **agreed**.

**R4-2016585 CR to MAC-CE based TCI State Switching requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1402 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

In the current version of MAC-CE based TCI state switch requirement, there is a discrepancy between RAN1 spec and RAN4 requirement. Additional delay introduced by RAN4 should be removed so that it can be consistent with UE behaviour specified in RAN1 spec.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **merged**.

##### 7.1.6.7 Active BWP switching [NR\_unlic-Core]

##### 7.1.6.8 RLM [NR\_unlic-Core]

**R4-2015519 CR on RLM requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1289 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

1. The agreement when Lin exceeds Lin,max is not captured that UE shall not indicate IS to higher layer for this evalaution period.

2. The CSI-RS based RLM descriptions shall be removed.

3. It is stated in the spec that the UE shall not perform CCA procedure on any of the serving carrier frequencies with CCA after the expiry of T310. However, after the T310 expiries, UE will initiate RRC re-establishment procedure or go to IDLE mode, and UE may trigger UL transmission with CCA for re-establishment or random access. Thus, the description here is not needed and which is conflict with the potential UE behavior.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **merged**.

**R4-2016413 Updates in RLM requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1386 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Misaligned notation.

The agreement “For both LBE and FBE, RLM requirements shall not rely on COT” (WF in R4-2005367) is not captured in RLM requirements for NR-U in 38.133.

The agreement “UE behaviour when Lin,max is exceeded: For this evaluation period, UE layer 1 shall not send any in-sync indication to higher layers.” (WF in R4-1912851) is not captured.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **revised to R4-2017086**.

**R4-2017086 Updates in RLM requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1386 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016413)

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **postponed**.

##### 7.1.6.9 Beam management [NR\_unlic-Core]

**R4-2015389 Remaining issues in beam management in NR-U**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discusses the issue with CSI reporting when the HARQ ACK for the MAC-CE with the deactivation command is blocked by UL LBT failure.

Proposal 1: RAN4 to wait for the reply LS from RAN1 on the UE behaviour when the transmission of HARQ-ACK for MAC CE deactivation for semi-persistent CSI reporting is blocked by UL LBT failure.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2015520 CR on Beam mangement requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1290 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

1. The condition for BFD and CBD is that the SSB configured for beam failure is actually transmitted within the UE active DL BWP during the entire evaluation period, where the CCA operation is not considered.

2. It is stated in the current spec that If LCBD>LCBD,max, UE assumes no new candidate beams found. Similar clarification in RLM is needed that UE should assume no new candidate beam found only for this evaluation period. UE shall keep measurement on the configured CBD-RS until the beamFailureRecoveryTimer expires.

3.There are some typos need to be fixed.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **merged**.

**R4-2015818 Open issues on beam management for NR-U**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the open issues on BM for NR-U.

Proposal 1: Introduce new clause 9.5A in TS38.133 for L1-RSRP reporting under CCA.

Proposal 2: RAN4 should wait for LS response from RAN1 on the UE behavior when UE cannot transmit HARQ-ACK for MAC CE deactivation for semi-persistent CSI reporting. Once RAN4 receives the LS response from RAN1, RAN4 should restart the discussion and capture the UE behavior in TS38.133 if necessary.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2015819 CR: Beam management requirements with CCA**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1332 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Clarification of applicability of link recovery requirements with CCA

Clean up of link recovery requirements.

Restrucuring the spec structure of L1-RSRP reporting with CCA

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **revised to R4-2017087**.

**R4-2017087 CR: Beam management requirements with CCA**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1332 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015819)

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **postponed**.

##### 7.1.6.10 Measurement requirements [NR\_unlic-Core]

**R4-2014012 Remaining issues in intra and inter-frequency measurements**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

Proposal 1: Confirm the definition that a reference cell is available at the UE provided at least one SSB is available at the UE during the last 160 ms; otherwise it is unavailable at the UE.

Proposal 2: The RSSI measurement bandwidth shall be the LBT bandwidth.

Proposal 3: If UE cannot transmit HARQ-ACK on MAC-CE deactivation due to UL CCA failure, UE continues to be in its previous state, i.e., it should measure and report L1-RSRP until it successfully transmits HARQ-ACK.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2014869 Discussion on measurement requirements for NR-U**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Abstract:**

Proposal 1: For the UEs which supporting NR-U SCell but not NR-U PCell/PSCell, the requirements of NR intra-/inter- frequency measurements with CCA are not applicable if the measurement target NR-U cells are asynchronized to the UE’s NR PCell/PSCell.

Proposal 2: Add an optional UE capability for supporting SFTD measurement for NR neighbor cell in unlicensed band.

Proposal 3: CSSF outside gaps (CSSFoutside\_gap,i ) should be additionally increased if one MO configured both for RSSI measurement with gap and SSB-based measurement gap.

Proposal 4: CSSF within measurement gaps (CSSFwithin\_gap,i ) needs also to be adapted to account for inter-frequency RSSI/CO measurements and intra-frequency RSSI/CO measurements with gaps.

Proposal 5: Regarding the CSSF within measurement gaps (CSSFwithin\_gap,i ), a MO should be counted twice, if the MO with both SSB based measurerment and RSSI/CO measurement which are candidates to be measured in gap j where the measurement object i is also a candidate

Proposal 6: It is not necessary to include the restriction on 1 data symbol before the first RSSI measurement symbol configured by RMTC, and 1 data symbol after the last RSSI measurement symbol configured by RMTC.

Proposal 7: Add clarification for UL scheduling restriction as “The UE is not expected to transmit PUCCH/PUSCH/SRS on the UL symbols which are overlapping in time with the RSSI measurement symbols configured by RMTC”.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2014870 CR on intra-frequency and inter-frequency measurement with CCA and RSSI measurements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1211 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

This CR includes 3 parts:

(change #1) Carrier-specific scaling factor for RSSI measurements need to be defined.

(change #2 &#4) For the UEs which supporting NR-U SCell (Scenario A) but not NR-U PCell/PSCell (Scenario B, C), the requirement should not applicable when the measurement target NR-U cells are asynchronized to NR PCell/PSCell.

(change #3) Regarding the UL scheduling restriction due to RSSI measurement, it needs to clarify the exact UL symbols that UE is not expected to transmit. As illustrated below, there would be 2 UL symbols will be impacted by the RSSI symbols.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **postponed**.

**R4-2015205 CR to 38.133 on NR-U intra-frequency measurements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1247 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Remove editor notes related to scheduling restriction during RSSI and channel occupancy measurements in NR-U

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **merged**.

**R4-2015387 Remaining aspects in measurement requirements in NR-U**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discusses remaining aspects in measurement requirements in NR-U.

Proposal 1: For cell detection, UE is required to monitor at least the same number of candidate SSB positions as in other RRM measurements.

Observation 3: In intra-frequency RSSI measurements, the UE performs the measurement using the numerology of the active DL bandwidth part.

Proposal 2: For RSSI measurements, it is not necessary to extend the scheduling restriction for 1 data symbol before the RMTC, and for 1 data symbol after the RMTC.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2015521 CR on intra-frequency measurement requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1291 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

There is an editor’s note about whether to intorduce additional 1 symbol before and after RMTC.Based on analysis in our accompanied paper, there is no need to introduce additional 1 symbol before and after RMTC.

There is a typo need to be fixed.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **agreed**.

**R4-2015522 Discussion on measurement requirements for NR-U**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: In FR1 inter-band CA, the scheduling restriction due to one CC shall not apply to other CCs on the other bands.

Proposal 2: It is suggested not to include the scheduling restriction on 1 data symbol before the first RSSI measurement symbol configured by RMTC, and 1 data symbol after the last RSSI measurement symbol configured by RMTC

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2016419 Measurementequirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1390 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

In R4-1915777 (RAN4#93), it was agreed that Rel-15 accuracy apply for RSRP/RSRQ/SINR/L1-RSRP measurements in NR-U.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **revised to R4-2017305**.

**R4-2017305 Measurement requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1390 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016419)

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **agreed**.

**R4-2016564 Remaining issues on measurement requirements in NR-U**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

In this paper, we discuss the remaining issues on measurement requirements in NR-U.

Proposal 1. For cell detection the requirements are defined under assumption that UE monitors at least 1 candidate SSB position in one SSB block burst.

Proposal 2. In FR1 inter-band CA, the scheduling restriction due to one CC shall not apply to other CCs on the other bands.

Proposal 3. At least from MAC (RAN2) layer perspective, UE follows the actions related to MAC-CE activation/deactivation command immediately after decoding the MAC-CE command regardless of whether UE is able to send HARQ-ACK feedback or not.

Proposal 4a. It is necessary to include the restriction on 1 data symbol before the first RSSI measurement symbol configured by RMTC, and 1 data symbol after the last RSSI measurement symbol configured by RMTC.

Proposal 4b. It is not necessary to include the restriction on 1 data symbol before the first RSSI measurement symbol configured by RMTC, and 1 data symbol after the last RSSI measurement symbol configured by RMTC if the reference timing for intra-frequency RSSI/CO measurements in unlicensed spectrum is based on UE serving cell’s timing.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

##### 7.1.6.11 Measurement capability and reporting criteria [NR\_unlic-Core]

**R4-2014283 On measurement capability of NR-U**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Apple*

**Abstract:**

Observation: for a certain SSB index which has only one single candidate SSB position in the SSB burst, UE cannot monitor 2 candidate SSB position for this SSB in one SSB burst.

Proposal 1: Except cell detection, RRM core requirements are defined under assumption what UE monitors the first 2 successive QCL’ed candidate SSB positions (i.e. N1 = N2 = 2). For a certain SSB index which has only one single candidate SSB position in the SSB burst, UE monitors 1 candidate SSB position for this SSB in one SSB burst.

Proposal 2: For cell detection the requirements are defined under assumption that UE monitors at least 1 candidate SSB position in one SSB block burst.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2015523 CR on CSSF RSSI/CO measurement for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1292 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The CSSF for RSSI/CO measurement on a carrier frequency with CCA is missing. The CSSF for intra-frequency RSSI/CO measurement without gap when SMTC and RMTC are overlapping shall be considered. The CSSF for measurement within gap shall be consiered for RSSI/CO measurement with measurement gaps.

It should be noticed that there are also changes on the CSSF part in other parallel discussions for other features. So the changes for NR-U is proposed based on our CR for CSI-RS measurement [R4-2015491]. The changes for NR-U only is with the change mark of “Huawei-NR-U”

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **postponed**.

**R4-2016414 Clause numbering correction**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1387 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The clause numbering for two new NR-U clauses is according to the earlier agreed specification structure in R4-1914628, but is currently missing the corresonding necessary top-level and preceding clauses in TS 38.133. Namely: we have 9.1A.3.2 and 9.1A.3.2a but there are no top-level clauses for them, e.g., 9.1A.3 or even 9.1A and we have no 9.1A.3.1 either. Introducing these missing top-level sections (approach 1) is not optimal and will result in a lot of redundancy, therefore we propose (approach 2) to just change to 9.1.3A.1 and 9.1.3A.1A and introduce 9.1.3A.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **agreed**.

##### 7.1.6.12 Timing [NR\_unlic-Core]

**R4-2014014 Definition of an available reference cell**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

Proposal 1: Confirm the definition that a reference cell is available at the UE provided at least one SSB is available at the UE during the last 160 ms; otherwise it is unavailable at the UE.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2015204 CR to 38.133 - Clarification of NR-U timing requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1246 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Clarify the definition of an available timing reference cell in NR-U

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **merged**.

**R4-2015388 On NR-U Timing requirements**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discusses the clarification of the definition of an available timing reference cell in carrier frequencies with CCA.

Proposal 1: For NR-U, as in NR, a reference cell is available at the UE provided at least one SSB is available at the UE during the last 160 ms; otherwise it is unavailable at the UE.

Proposal 2: Clarify in the specification the definition of an available reference timing cell in carrier frequencies with CCA.

Proposal 3: If the proposed clarification is agreed, remove the Editor Note in clause 7.1.2 in TS 38.133.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2015524 Discussion on Timing requirements for NR-U**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: The available reference cell shall be defined based on the same conclusion for RLM/RRM.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

**R4-2016177 Correction to timing requirements in NR-U**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Ericsson*

**Abstract:**

To clarify gradual timing adjustment also applied to CCA

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **revised to R4-2017088**.

**R4-2017088 Correction to timing requirements in NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1407 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016177)

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **agreed**.

**R4-2016563 Definition of Available Reference Cell for Timing Requirements in NR-U**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

In this paper, we discuss remaining open issues for Timing requirements in NR-U.

Proposal 1. The availability/unavailability of a reference cell for timing purposes should be treated similar to the availability/unavailability of ‘X’s as in other RRM/RLM cases.

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **noted**.

##### 7.1.6.13 Other requirements [NR\_unlic-Core]

**R4-2015170 Updates to general section for NR-U in 38.133**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1241 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

NR-U bands not included for band grouping table

**Discussion:**

See email discussion summary for [97e][205] NR\_unlic\_RRM\_1 in R4-2017004.

**Decision:** The document was **agreed**.

#### 7.1.7 RRM perf. requirements (38.133) [NR\_unlic-Perf]

**R4-2017005 Email discussion summary for [97e][206] NR\_unlic\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [96e][206] NR\_unlic\_RRM\_2. The email thread was moderated by Erika Almeida (Nokia Solutions & Networks (I)) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017276**.

**R4-2017276 Email discussion summary for [97e][206] NR\_unlic\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2017005)

**Discussion:**

The contribution summarized email discussion thread [96e][206] NR\_unlic\_RRM\_2. The email thread was moderated by Erika Almeida (Nokia Solutions & Networks (I)) and treated during RRM session chaired by Andrey Chervyakov (Intel).

GTW session (November 03, 2020)

Sub-topic 1-1: Measurement accuracy

* Issue 1-1-1: RSSI Measurement Bandwidth
  + Option 1: The RSSI measurement shall be performed over unified measurement BW.
    - (Huawei, HiSilicon, R4-2015526):
  + Option 2: The RSSI measurement bandwidth shall be the LBT bandwidth.
    - (Nokia, Nokia Shanghai Bell, R4-2015391, ZTE Corp, R4-2014012):
  + Option 3 There is no need to specify RSSI measurement bandwidth for the UE.
    - (Qualcomm, R4-2016566)

Discussion:

MTK: Option 3

Apple: Option 2. Follow RAN1 spec definition

Nokia: Need to follow RAN1 spec. Measurement should not be scaled. There should be same understanding between UEs and gNB

E///: Agree with Option 2.

QC: the only requirement on the UE side is measurement accuracy. No need to repeat it once again in RAN4.

ZTE: Option 2.

QC: UE may not be required to do normalization

Nokia: we have the requirement not to do normalization in the frequency and linear average applies for different OFDM symbols

ZTE: there may be non-uniform RSSI for different LBT CBWs. In this case UE cannot do wideband averaging. UE should do wideband measurement.

Agreement: RSSI Measurement Bandwidth is the bandwidth defined in TS 38.215 RSSI measurement definition (i.e. “the measurement bandwidth corresponding to the channel bandwidth defined in Clause 4 of TS 37.213 [17]”)

* Issue 1-1-2: RSSI Measurement Accuracy
  + Option 1: The RSSI measurement accuracy requirements shall follow the same requirements as for LAA
    - (Nokia, Nokia Shanghai Bell, R4-2015391): Define RSSI measurement accuracy requirements in NR-U to be the same as in LTE-LAA.
    - (Huawei, HiSilicon, R4-2015526): The RSSI measurement accuracy requirements shall follow the same requirements for LAA.
    - (Qualcomm, R4-2016566): The RSSI measurement accuracy requirements for NR-U are the same as for CLI-RSSI as specified in Section 10.1.22.2 in TS 38.133 (and for RSSI measurements in Section 9.1.18.5 in TS 36.133)

Agreement: Define RSSI measurement accuracy requirements in NR-U to be the same as in LTE-LAA.

Sub-topic 3-1 (Specification Structure)

* Issue 3-1-1: Specification Structure for test cases
  + Option 1 (Ericsson, R4-2016415) Create in TS 38.133 the following new top-level sections for NR-test cases:
    - A.9 NR standalone tests with SCell under CCA and PCell in FR1
    - A.10 EN-DC tests with NR PSCell under CCA
    - A.11 NR-U standalone tests with NR PCell under CCA (note: including also NR/E-UTRA measurements and including re-selection in IDLE and HO from NR-U to NR-U/NR/E-UTRA cells and from NR-U/NR to NR-U cells)
    - A.12 E-UTRA standalone tests with NR-U cells
      * Inter-RAT E-UTRA–NR-U cell re-selection with NR-U target cell
      * Inter-RAT E-UTRA–NR-U HO with NR-U target cell
      * Inter-RAT E-UTRA–NR-U measurements
      * Inter-RAT SFTD with NR-U neighbor cell
  + Option 2 (Nokia, R4-2015391) Adopt in NR-U RRM test cases, the same specification structure as in the NR-U Core requirements: include the NR-U RRM test cases immediately below the corresponding NR RRM test cases and add the suffix A to the clause number. Capture the test cases related to requirements in TS 36.133 in the same specification.

Discussion:

MTK: Both options have pros/cons. For Option 1 we need to clearly list the corresponding Core part section to avoid ambiguity.

Nokia: We are ok with Option 1 as well. Is the intention to capture all in 38.133?

E///: our preference is to keep all test cases in 38.133

MTK: agree with E/// to capture test cases in 38.133 similar to what we did in Rel-15

Nokia: fine

Agreement:

* + Create in TS 38.133 the following new top-level sections for NR-test cases:
    - A.9 NR standalone tests with SCell under CCA and PCell in FR1
    - A.10 EN-DC tests with NR PSCell under CCA
    - A.11 NR-U standalone tests with NR PCell under CCA (note: including also NR/E-UTRA measurements and including re-selection in IDLE and HO from NR-U to NR-U/NR/E-UTRA cells and from NR-U/NR to NR-U cells)
    - A.12 E-UTRA standalone tests with NR-U cells
      * Inter-RAT E-UTRA–NR-U cell re-selection with NR-U target cell
      * Inter-RAT E-UTRA–NR-U HO with NR-U target cell
      * Inter-RAT E-UTRA–NR-U measurements
      * Inter-RAT SFTD with NR-U neighbor cell

Sub-topic 3-2 (RRM test scope and applicability rules)

* Issue 3-2-1: RRM tests scope – general principle to define a test case list
  + Proposal 1 (Nokia, Nokia Shanghai Bell, R4-2015391): RAN4 to define test cases for all core requirements that were changed or created during the NR-U RRM core work.

Discussion:

E///: Need to go case by case.

Nokia: our intention is not to exclude other test cases but define the requirements at least for these requirements

* Issue 3-2-2: RRM tests scope – legacy test cases for SA NR-U
  + Proposal 1 (Ericsson, R4-2016416): Legacy test cases are to be specified for SA NR-U, even if the requirements are the same as for legacy NR
    - This applies at least for UE not supporting legacy NR.
    - FFS: for UE supporting legacy NR and SA NR-U.

Discussion:

Nokia: the list of test cases is already huge even for the new requirements. Prefer to go case by case as well

QC: share same view as Nokia

* Issue 3-2-3: RRM tests scope – NR-U scenarios to be covered by NR-U test cases
  + Proposal 1 (Ericsson, R4;2016415): RAN4 will develop test cases for all scenarios applicable for a given requirement.

Discussion:

QC: same as for other issues it should be handled on a case by case basis

MTK: UE may not be required to pass test cases for multiple scenarios if they test the same behavior.

E///: share MTK view. Need to discuss applicability rules to avoid excessive testing.

Sub-topic 2-1: NR-U RRM test configurations

* Issue 2-2-1: Differentiation between FBE and LBE
  + Option 1: RAN4 to differentiate LBE and FBE DL LBT models in RRM tests. RAN4 to design different test cases covering LBE and FBE channel access.

Discussion:

QC: need to check if we can reuse the test cases for LBE and FBE.

MTK: we can have separate test cases. If UE supports both, then it can pass the LBE test cases only.

Nokia: agree with MTK that some applicability rules should apply.

E///: we suggest to look into test cases where such differentiation is needed

Agreement: Further identify the set of requirements for which LBE and FBE test cases shall be differentiated.

* Issue 2-2-2: DL LBT model for **LBE** operation
  + Option 1: For LBE test cases: RAN4 to adopt the following DL LBT model: 1) Define a probability of P=0.75 for the transmission of the DRS in the first candidate position. 2) In case of LBT failure for transmission in the first candidate position, define a probability of P = 0.75 for the transmission in the second candidate position for a given SSB index.

Discussion:

E///: Need further discussion on the probabilities.

QC: same view as E///

HW: have some concerns on the probabilities

Chair: strive to identify model parameters and candidate values.

* Issue 2-2-5: Exceeding Lmax values during RRM tests
  + Option 1: For RRM test cases for NR-U, exceeding Lmax should be avoided.

Discussion:

E///: Do not agree. We may need to test such behavior for some of the test cases

MTK: we are fine to have a few test cases to test such behavior.

Nokia: same concern as E///.

Apple: agree with MTK

1st round email discussion conclusions

**Topic #1: Measurement Accurac**

**Topic #2: NR-U RRM test configurations**

Issue 2-1-1: Whether to test wideband operation in RRM tests

Agreement

* DL wideband operation Mode 1 is used during RRM tests for NR-U.

Issue 2-2-7: UL LBT model

Agreement

* RAN4 to discuss a methodology to test UL LBT failures in RRM tests.

Issue 2-3-1: Frequency range

Agreement

* NR cells in NR-U test cases (e.g., for HO or in scenario A or for measurements) are always in FR1.

**Topic #3: NR-U RRM test cases**

Issue 3-1-2: Specification structure for common Configuration Parameters

Agreement

* Develop new sections for common test parameters in NR-U RRM test cases according to the table.

|  |  |
| --- | --- |
| **New section** | **Title** |
| A.3.1.\* | … under CCA |
| A.3.2.3 | Generic OFDMA Channel Noise Generator (OCNG) under CCA |
| A.3.7B | EN-DC test setup with PSCell under CCA |
| A..3.8.4 | PRACH configuration under CCA |
| A.3.10A | SSB configurations under CCA |
| A.3.16A | TCI state configurations under CCA |
| A.3.19 | Discovery Burst Transmission Window configuration under CCA |
| A.3.20 | Signal transmission model under CCA |
| NOTE: “\*” denotes different relevant sub sections | |

Issue 3-2-4: Applicability rules

GTW session (November 11, 2020)

Issue 3-4-2: Work Plan

* + Option 1 (Ericsson, R4-2016416):
    - Time plan for developing NR-U test cases:
      * RAN4#97-e (Nov 2020):
        + Agree on high-level list for test cases, work split, and specification structure
      * RAN4#98-e (Jan 2021):
        + Discuss and agree on basic common configurations and configuration details at least for Phase I test cases
      * RAN4#98-bis-e (April 2021):
        + Provide first drafts for Phase I test cases
        + Agree on common configurations and configuration details for Phase II test cases
      * RAN4#99-e (May 2021):
        + Provide final CRs for Phase I test cases.
        + Provide first drafts for Phase II test cases.
      * RAN4#100(August 2021):
        + Provide final CRs for Phase II test cases.
  + Option 2 (Qualcomm, R4-2016567)
    - RAN4 #97e (Oct-Nov 2020)
      * Way forward on general framework and test cases split
    - RAN4 #98e (Jan-Feb 2021)
      * CR endorsement and agreement
    - RAN4 #98-bis-e (April 2021)
      * Remaining CR agreement
      * Performance part completion

Discussion

* + Chair: Based on the latest SR the completion date is March 2021
  + QC: plan to request extension
  + Conclusion: align the work plan with current WI timelines. Further update in case the extension is granted.

Issue 3-2-2: RRM tests scope – legacy test cases for SA NR-U

Discussion:

E///: need to introduce such test cases and we can further discuss applicability

QC: agree with QC but need to avoided duplicated testing

MTK: do we need to consider such UEs (i.e. UEs which do not support licensed bands)?

E///: standard allows to do it

Nokia: Is the intention to create new test cases or just slightly update the existing test cases?

E///: aim to reuse and make modifications for parameters which are different

Agreement:

Define legacy test cases for SA NR-U

* Applicability rules are FFS. The test cases will apply at least for UEs supporting SA NR-U only.
* Legacy test cases correspond to requirements which are common to NR and NR-U

Issue 3-3-15: Intra-frequency measurement procedure

Agreement:

* *RAN4 to define at least the following test cases for the measurement procedures requirements:*
  + *Intra-frequency SS-RSRP measurements on:*
  + *NR-U SCC, with NR PCC (FR1)*
  + *NR-U PCC*
  + *NR-U SCC, with NR-U PCC*
  + *NR-U PSCC, with E-UTRAN PCC (FDD,TDD)*
  + *NR-U SCC measurements, with E-UTRAN PCC (FDD,TDD) and NR-U PSCC*
  + *L1-RSRP measurements on:*
  + *NR-U SCC, with NR PCC (FR1)*
  + *NR-U PCC*
  + *NR-U SCC, with NR-U PCC*
  + *NR-U PSCC, with E-UTRAN PCC (FDD,TDD)*
  + *NR-U SCC measurements, with E-UTRAN PCC (FDD,TDD) and NR-U PSCC*
  + *Intra-frequency RSSI and CO measurements on:*
  + *NR-U SCC, with NR PCC (FR1)*
  + *NR-U PCC*
  + *NR-U SCC, with NR-U PCC*
  + *NR-U PSCC, with E-UTRAN PCC (FDD,TDD)*
  + *NR-U SCC measurements, with E-UTRAN PCC (FDD,TDD) and NR-U PSCC*
  + *Intra-frequency SS-RSRQ and SS-SINR measurements on* 
    - *NR-U SCC, with NR PCC (FR1)*
    - *NR-U PCC*
    - *NR-U SCC, with NR-U PCC*
    - *NR-U PSCC, with E-UTRAN PCC (FDD,TDD)*
    - *NR-U SCC measurements, with E-UTRAN PCC (FDD,TDD) and NR-U PSCC*

**Decision:** The document was **noted**.

**R4-2017089 WF on NR-U RRM Performance requirements**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **approved**.

**R4-2017090 LS on clarification of RSSI measurement bandwidth**

*Type: LS out For: Approval  
 to RAN1  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **noted**.

**R4-2017352 Draft Big CR: Introduction of Rel-16 NR-U RRM performance requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Ericsson*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

##### 7.1.7.1 General [NR\_unlic-Perf]

**R4-2014871 Discussion on general test setting for NR-U test cases**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Abstract:**

Proposal 1: For RRM test cases for NR-U, exceeding Lmax should be avoided.

Proposal 2: For the cell-reselection test cases, Mp consecutive DRX cycles with LBT failures of the serving cell should be avoided.

Proposal 3: For test cases with DRX in use, the LBT can be modelled as either all SMTCs are with available SSBs or all SMTCs are with no SSBs available during one DRX cycle.

Proposal 4: It is assumed DL wideband operation Mode 1 is used during RRM tests for NR-U.

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **noted**.

**R4-2015391 On NR-U RRM performance**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discusses general topics in NR-U RRM performance.

Proposal 1: RAN4 to differentiate LBE and FBE DL LBT models.

Proposal 2: For LBE test cases: RAN4 to adopt the following DL LBT model: 1) Define a probability of P=0.75 for the transmission of the DRS in the first candidate position. 2) In case of LBT failure for transmission in the first candidate position, define a probability of P = 0.75 for the transmission in the second candidate position for a given SSB index.

Proposal 3: For FBE test cases: RAN4 to define a DL LBT model that considers a probability of P = 0.75 for the transmission of each DRS. Only the first SSB candidate position for a given SSB index shall be considered in these tests.

Proposal 4: RAN4 to discuss a methodology to test UL LBT failures in RRM tests.

Proposal 5: The RSSI measurement bandwidth is the LBT bandwidth.

Proposal 6: Define RSSI measurement accuracy requirements in NR-U to be the same as in LTE-LAA.

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **noted**.

**R4-2015525 CR on RSSI and CO performance requirements for NR-U**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

The RSSI measurement report mapping and accuracy requirements are missing.

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **merged**.

**R4-2015526 Discussion on performance requirements for RSSI measurement for NR-U**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: The RSSI measurement shall be performed over unified measurement BW.

Proposal 2: The RSSI measurement accuracy requirements shall follow the same requirements for LAA.

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **noted**.

**R4-2016415 General discussion on NR-U RRM test cases**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

General discussion on NR-U RRM test cases.

Proposal 1: The work on NR-U RRM test cases is divided into at least two phases.

Proposal 2: RAN4 will develop test cases for all scenarios applicable for a given requirement.

Proposal 3: RAN4 will discuss applicability rules when test cases have sufficiently progressed, e.g.:

o FFS: for a UE capable of multiple scenarios, the UE shall pass the test to verify the same requirements on the same type of cell (e.g. UE timing accuracy) in only one scenario.

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **noted**.

**R4-2016418 Measurement accuracy requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1389 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

In R4-1915777 (RAN4#93), it was agreed that Rel-15 accuracy apply for RSRP/RSRQ/SINR/L1-RSRP measurements in NR-U, but the requirements are currently missing for the NR-U bands.

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **revised to R4-2017091**.

**R4-2017091 Measurement accuracy requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1389 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016418)

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **endorsed**.

**R4-2016566 RSSI Measurement Accuracy Requirements in NR-U**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

In this paper, we discuss the RSSI measurement accuracy requirements in NR-U.

Proposal 1. There is no need to specify RSSI measurement bandwidth for the UE.

Proposal 2. The RSSI measurement accuracy requirements for NR-U are the same as for CLI-RSSI as specified in Section 10.1.22.2 in TS 38.133 (and for RSSI measurements in Section 9.1.18.5 in TS 36.133)

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **noted**.

##### 7.1.7.2 Test cases [NR\_unlic-Perf]

**R4-2014872 Discussion on RRM test cases in NR-U**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Abstract:**

Proposal 1: Regarding cell reselection and handover, new TCs are not needed if the target cell is not in CCA.

Proposal 2: Regarding random access, new dedicated TCs are not necessary.

Proposal 3: Regarding interruption, new TCs are not necessary except for the scenario would have multiple interruption windows, e.g. SCell activation/deactivation and PCell addition/release.

Proposal 4: Regarding active BWP switch delay, new TCs are not necessary, but new TCs are needed for BWP switch delay on consistent UL LBT recovery.

Proposal 5: Regarding RSSI, FFS the TCs when CSSF for RSSI is concluded.

Proposal 6: Regarding measurements procedure and accuracy requirements, new TCs are not needed if the target MO is not in CCA.

Proposal 7: Regarding SS-RSRQ/SS-SINR, the new TCs are not necessary. The UE behavior in CCA can be covered by the tests for SS-RSRP with CCA.

Proposal 8: Regarding UE timing, the new TCs are not necessary for MRTD, MTTD, TA.

Proposal 9: For the RRM test cases for UE transmit timing based on a reference cell on a carrier frequency subject to CCA, a configuration of activated Scell shall be provided with the same timing as the reference cell. As the test requirement, UE transmit timing offset should stay within NTA + NTA\_offset) ×Tc ± Te of the first detected path of DL SS or UE shall not transmit any uplink signal.

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **noted**.

**R4-2015390 On NR-U RRM test cases**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Presents a list of test cases to be considered in the NR-U performance work.

Proposal 1: Adopt in NR-U RRM test cases, the same specification structure as in the NR-U Core requirements: include the NR-U RRM test cases immediately below the corresponding NR RRM test cases and add the suffix A to the clause number.

Proposal 2: RAN4 to design different test cases covering LBE and FBE channel access.

Proposal 3: To minimize the number of test cases to be performed by UEs that support both LBE and FBE, for each requirement, the test equipment should select with equal probability the mode to be used in this test cases (FBE or LBE).

Proposal 4: RAN4 to define test cases for all core requirements that were changed or created during the NR-U RRM core work.

Proposal 5: RAN4 to consider the tests defined in Table 1 as a baseline for the NR-U RRM test cases definition in Rel-16.

Proposal 6: RAN4 to discuss the needed test cases for measurement performance requirements after detailing how to capture the performance requirements in the specification.

Proposal 7: RAN4 to consider the tests for 36.133 defined in Table 2 as a baseline for the NR-U RRM test cases definition in Rel-16.

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **noted**.

**R4-2016416 NR-U RRM test case list and time plan**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

NR-U RRM test case list and time plan.

Proposal 1: RAN4 develops NR-U test cases, based on the test case list in Table 1.

Proposal 2: Legacy test cases are to be specified for SA NR-U, even if the requirements are the same as for legacy NR

o This applies at least for UE not supporting legacy NR.

o FFS: for UE supporting legacy NR and SA NR-U.

Proposal 3: Time plan for developing NR-U test cases:

o RAN4#97-e (Nov 2020):

 Agree on high-level list for test cases, work split, and specification structure

o RAN4#98-e (Jan 2021):

 Discuss and agree on basic common configurations and configuration details at least for Phase I test cases

 RAN4#98-bis-e (April 2021):Provide first drafts for Phase I test cases

 Agree on common configurations and configuration details for Phase II test cases

o RAN4#99-e (May 2021):

 Provide final CRs for Phase I test cases.

 Provide first drafts for Phase II test cases.

o RAN4#100(August 2021):

 Provide final CRs for Phase II test cases.

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **noted**.

**R4-2016417 NR-U test cases structure**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1388 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

There are no test cases for NR-U which RAN4 plans to develop, the specification structure needs to be agreed for NR-U test cases

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **revised to R4-2017092**.

**R4-2017092 NR-U test cases structure**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1388 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016417)

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **endorsed**.

**R4-2016567 NR-U RRM Performance Work Plan and Work Split**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

In this paper, we discuss the work plan and work split for RRM performance requirements for NR-U.

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **revised to R4-2017332**.

**R4-2017332 NR-U RRM Performance Work Plan**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

(Replaces R4-2016567)

**Discussion:**

See email discussion summary for [97e][206] NR\_unlic\_RRM\_2 in R4-2017005.

**Decision:** The document was **approved**.

#### 7.1.8 Demodulation and CSI requirements (38.101-4/38.104) [NR\_unlic-Perf]

##### 7.1.8.1 General [NR\_unlic-Perf]

|  |
| --- |
| GTW Session 11.9th  **Topics from UE demod email thread[315]**  1: General part  **Issue 1-1-1: Define additional separate tests for FBE and LBE**   * Proposals   + Option 1: No (Apple, MediaTek, Qualcomm, Intel, Huawei)   + Option 2: Yes * Recommended WF   + Do not define additional tests specific for FBE or LBE;   Agreement: Do not define additional tests specific for FBE or LBE.  FFS whether separate or one unified LBT model for FBE and LBE.  Huawei: Is it related issue 2-1-1 to design PDSCH requirements agonistic to FBE or LBE. How about LBT model except for test parameters? WE think separate LBT model maybe needed or not.  QC: We believe it’s feasible to define requirements applied for both.  **Issue 1-1-2: Define requirements with Fixed Downlink Transmission (COT) duration**   * Proposals   + Option 1: No, use random COT from a set of values (Huawei, Ericsson );   + Option 2: Yes (Ericsson, Qualcomm, Apple, MediaTek, Intel); * Recommended WF   + Does Huawei agree to define a Fixed Downlink (or COT) Transmission duration?   E///: We also support option 1, the purpose of LAA burst transmission model was to verify the performance under non-slot based on transmission. We can limit the upper limit as 2ms with random COT.  Huawei: For LBE, dynamic COT more realistic. The COT and burst transmission mode should be discussed together. In last RAN4 meeting, we already use LAA as staring point. Several companies share how to adopt LAA model with some modifications.  One generic LBT model or separate LBT model for FBE and LBE ? We should support dynamic LBET model.  Apple: What’s the difference among fixed COT and dynamic COT model? We think no different processing from UE receiver side for NR. We agree using LAA LBT model as starting point, not means we need to accept everything from there.  Qualcomm: Similar view as Apple, no difference from UE receiver side. Meanwhile test effort will be increased compared to fixed model considering NR-U as uplink transmission.  Huawei: We should combine burst transmission length and fixed COT length; LBE and FBE.  QC: Channel access and DL transmission duration are separate topics.  FFS for COT duration with two options:   * Option 1: random COT duration * Option 2: Fixed Downlink Transmission (COT) duration   **Issue 1-1-7: Test Scenarios for Demodulation requirements;**   * Proposals   + Option 1: Only Scenario A (MediaTek, Huawei);     - Use PCell for SSB and HARQ feedback (Huawei);   + Option 2: Only Scenario C     - Option 2-1: Defined only for Scenario C, applicable to other scenarios ();   + Option 3: Both Scenario A and Scenario C (Apple, Ericsson, Qualcomm, Intel);     - Prioritize Scenario A (MediaTek); * Recommended WF   + Define requirements for the unlicensed CC, and apply for both scenarios A and C   Agreement:  Define same test cases for the unlicensed CC, and apply for both scenarios A and C   * FFS for details test set-up for scenario A and C   **Issue 1-1-8: Define PDCCH requirements**   * Proposals   + Option 1: Yes, with adapted burst transmission model (Ericsson);   + Option 2: No (Apple, MediaTek, Intel, Huawei, Qualcomm, Intel, Huawei); * Recommended WF   + Do not define NR-U Demod PDCCH Performance Requirements   Agreement: Do not define NR-U Demod PDCCH Performance Requirements  **Issue 1-1-9: Define CQI reporting requirements**   * Proposals   + Option 1: Yes (Huawei)     - Option 1-1: For static channel conditions, reusing the burst model(Apple);     - Option 1-2: With adapted burst transmission model (Ericsson);   + Option 2: No   + Option 3: Needs further discussions (MediaTek, Qualcomm); * Recommended WF   + Keep discussing, and clarify expected behavior   Apple: Whether the parameters or these options features should be enable during CSI test cases?  Huawei: We also think more study needed.  FFS for whether CQI requirements needed or not, further discuss the configured parameters and expected UE behavior  **Issue 1-2-2: Slot Format proposed**   * Proposals   + Option 1: For 30kHz, 2ms Duration, DDDS (S=7D:2G:2U) according to presented model in R4-2016063 (Qualcomm);   + Option 2: For 30kHz, 7D -1S-2U (Huawei); * Recommended WF   + Discuss in the 2nd round   Huawei: Just try to reuse the typical pattern and aligned with Rel-15 used.  QC: For NR-U operation, the meaning of TDD pattern in NR-U operation? Every COT can be shared among uplink and downlink.  FFS for slot format  **Issue 1-3-1: LBT Model in Demod Performance Tests**   * Proposals   + Option 1: Model LBT failure as part of the burst transmission model (Apple, Qualcomm, Huawei, MediaTek, Ericsson, Intel);   + Option 2: No LBT modelling (); * Recommended WF   + Model LBT as part of the burst transmission Model;   Agreement: Model LBT failure ~~implicitly~~ as part of the DL burst transmission model.  **Issue 1-3-2: Applicability of LBT Model to SSB Transmission**   * Proposals   + Option 1: Same LBT model as for Data (MediaTek, Apple, Qualcomm, Ericsson);   + Option 2: Don’t model LBT failure for SSB slot additionally (Huawei, Ericsson); * Recommended WF   + Clarify in the 2nd round option 2 and discuss whether needs to be treated according to the Scenario;   Huawei: SSB transmitted in broad cast manner, not sure how to model SSB failure. gNB failed to get the chance to transmission in instance, then SSB may be missed.  E///: We are also fine with option 1.  Apple: The same burst transmission model applied for data and SSB. SSB and TRS ?  QC: We think no meaning to treat the DL signaling include data, SSB, TRS separately. A unified model applied for all DL signals.  Huawei: During test cases, just configure SSB periodicity in test cases.  Apple: without CSI validation and DCI 2\_0 will be unpractical.  Agreement: Define the unified burst transmission model applied for all DL transmitted signals in unlicensed carriers.  QC: no SSB transmission from unlicensed cell in scenario A?  Huawei: SSB transmitted in licensed carrier in scenario A.  **Topics from BS demod email thread[316]**  1: General part：  **1-5  Sub-topic 1-5-1: Test scenarios**  **Issue 1-5-1-1: How to reuse NR Rel-15 performance requirements for licensed CC for Scenario A**  ·         Proposals  -          Option 1: Reuse all applicable requirements during the selection of the largest aggregated bandwidth for testing.  -          Option 2: Just choose one specific bandwidth for testing, such as 20MHz  ·         Recommended WF  Nokia: On scenario A, option 1 more proper, the requirements will be applied for licensed operation as well.  Ericsson: prefer option 2. The requirements similar with different CHBWs, introduce test case with 20MHz only.  Samsung: Both option 1 and option 2 feasible. For NR-U we think 20MHz for unlicensed CHBW, to align with this, 20MHz can be used for licensed CC as well.  Huawei: We think both option 2 and option 1 feasible.  Nokia: Will gNB support Scenario A, does this gNB need to operate under such licensed band without NR-U operation as well?  FFS for further study    **Issue 1-5-1-2: Bandwidth for performance requirements definition for unlicensed carrier**  ·         Proposals  -          Option 1: Only define the requirements for single carrier with 20MHz (Ericsson, Samsung)  -          Option 2: Define the requirements for single carrier with 20MHz,40MHz,60MHz and 80MHz, with the test applicability rule that a BS only has to perform tests for 20MHz and the largest supported bandwidth based on BS vendor’s declaration (Nokia, Intel)  -          Option 3: Define the requirements for single carrier with 20MHz,40MHz,60MHz and 80MHz, with the test applicability rule that a BS only has to perform tests for the largest supported bandwidth based on BS vendor’s declaration (Nokia, Huawei)  - Option 4: define the requirements for 20MHz only and define test applicable rules based on declaration (Samsung)  ·         Recommended WF  Nokia: both option 2 and option 3 fine for us.  Samsung: we think 20MHz typical considering LBT with wideband operation. Based on Rel-15 evaluation and history, the CHBW impact minor. We think test effort need to be considered. How to deal with wideband operation 1.  Huawei: we prefer option 3.  E///: We share similar view as Samsung. We can have test applicable rules.  FFS with below options:  Option 1: Define the requirements for single carrier with 20MHz only with the test applicability rule that a BS only has to perform tests for the largest supported bandwidth based on BS vendor’s declaration.  Option 2: Define the requirements for single carrier with 20MHz,40MHz,60MHz and 80MHz, with the test applicability rule that a BS only has to perform tests for the largest supported bandwidth based on BS vendor’s declaration  **Issue 1-5-1-3: Test cases definition for Scenario A and Scenario C**  ·         Proposals  -          Option 1: Only define test cases for scenario A  -          Option 2: Define different test cases for Scenario A and C, i.e. different requirements for unlicensed CC for Scenario A and C  -          Option 3: Define one set of test cases for Scenarios A and C, i.e. one set of requirements for unlicensed CC for Scenario A and C.  ·         Recommended WF  -          Moderator reword the options, please comments if it includes all options from companies.  Agreement:  RAN4 will introduce Test cases/requirements for both scenario A and scenario C with below candidate options:   * Define one set of test cases for Scenarios A and C, i.e. one set of requirements for unlicensed CC for Scenario A and C. (Huawei, Samsung, Nokia, E/// ,Intel)   Nokia: Do we plan to have BS declaration for these scenarios? Interlace and so on..  E///: We think we need to introduce test cases covering both scenarios.  **Issue 1-5-1-4: Test applicability**  ·         Proposals  n  The tests should apply based on BS declaration of supporting Scenario A and~~/or~~ Scenario C  o    Option 1: If a BS supports both Scenario A and Scenario C, and define one set of performance requirements for unlicensed CC  l  Option 1a: BS only needs to pass the requirements for Scenario A that include performance requirements for both licensed CC(s) and unlicensed CC(s)  l  Option 1b: BS only tests performance requirements ~~f~~or scenario C for unlicensed CC(s)  ·         Recommended WF  -          Removed Option 1c from 1st round summary considering that it is similar as Option 1a.   FFS for the test applicable rules for a BS supports both Scenario A and Scenario C   * Option 1a: BS only needs to pass the requirements for Scenario A that include performance requirements for both licensed CC(s) and unlicensed CC(s) * Option 1b: BS only tests performance requirements ~~f~~or scenario C for unlicensed CC(s) * Other options not excluded |

**R4-2017413 Email discussion summary for [97e][315] NR\_unlic\_Demod\_UE**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

**Discussion:**

The contribution summarized email discussion thread [97e][315] NR\_unlic\_Demod\_UE. The email thread was moderated by Gaurav Nigam (Qualcomm Incorporated) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017610**.

**R4-2017610 Email discussion summary for [97e][315] NR\_unlic\_Demod\_UE**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

(Replaces R4-2017413)

**Discussion:**

The contribution summarized email discussion thread [97e][315] NR\_unlic\_Demod\_UE. The email thread was moderated by Gaurav Nigam (Qualcomm Incorporated) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017465 Way Forward on NR-U UE demodulation requirements**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **revised to R4-2017685**.

**R4-2017685 Way Forward on NR-U UE demodulation requirements**

*Type: other For: discussion  
 Source: Qualcomm*

(Replaces R4-2017465)

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **approved**.

**R4-2017414 Email discussion summary for [97e][316] NR\_unlic\_Demod\_BS**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][316] NR\_unlic\_Demod\_BS. The email thread was moderated by Tricia Li (Huawei) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017611**.

**R4-2017611 Email discussion summary for [97e][316] NR\_unlic\_Demod\_BS**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2017414)

**Discussion:**

The contribution summarized email discussion thread [97e][316] NR\_unlic\_Demod\_BS. The email thread was moderated by Tricia Li (Huawei) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017466 Way forward on NR-U BS demodulation requirements for general part and PUSCH**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **revised to R4-2017688**.

**R4-2017688 Way forward on NR-U BS demodulation requirements for general part and PUSCH**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

(Replaces R4-2017466)

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **approved**.

**R4-2017467 Way forward on PUCCH demodulation requirements**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **approved**.

**R4-2017468 Way forward on PRACH demodulation requirements**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **approved**.

**R4-2014240 Discussion on demodulation requirements for NR-U**

*Type: discussion For: Discussion  
 Source: Apple*

**Abstract:**

Proposal #1: Do not define additional tests for FBE and LBE devices separately.

Proposal #2: Define requirements with randomly chosen COT duration and fixed DRS window duration.

Proposal #3: Define requirements for both Scenario A and Scenario C and define applicability rules.

Proposal #4: Do not define requirements for PDCCH with DCI format 2-0.

Proposal #5: Introduce CQI reporting requirements in static channel conditions for NR-U.

Proposal #6: Do not model LBT failure separately in addition to the burst transmission model.

Proposal #7: Burst transmission model shall also be applied to SSB slots.

Proposal #8: COT duration shall be randomly chosen from a set during the simulation.

Proposal #9: Define requirements with PDSCH mapping Type A alone.

Proposal #10: Configure PDCCH monitoring on Format 2-0 with CO-DurationPerCell-r16 and indicate the randomly chosen COT duration

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

**R4-2014940 General Demodulation performance requirements for NR-U**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on general aspects regarding NR-U BS demodulation.

Proposal 1: RAN4 to define PUSCH, PRACH, and PUCCH requirements that apply to all scenarios A, B, and C.

Proposal 2: RAN4 to define BS demodulation wideband requirements that are agnostic to the wideband operation modes 1 and 2.

Proposal 3: RAN4 to define wideband performance requirements for 20, 40, 60, and 80 MHz.

Proposal 4: Similar to Rel-15, depending on vendor declaration, define an applicability rule that a BS only has to perform tests for 20 MHz and the largest supported bandwidth.

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

**R4-2015130 Discussion on UE performance requirement for NR-U**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Abstract:**

Proposal 1: Define same test cases for both FBE and LBE devices.

Proposal 2: Support option 1. To define test cases for carrier aggregation between licensed band NR (PCell) and NR-U (SCell).

Proposal 3: Support option 2. Do not define test case for PDCCH format 2\_0.

Proposal 4: Support option 3 to define test case for both PDSCH mapping Type A and Type B.

Proposal 5: We propose using a subset of fixed values for PDSCH Type B duration and starting position, for example, [starting position, duration] = [2, 4], [2, 12], can be selected.

Proposal 6: Support to model LBT failure for data and SSB.

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

**R4-2015851 discussion on general issues in NR-U performance requirements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Discuss some general issues on BS and UE demodulation separately.

Proposal 1: Consider a minimum subset of Rel-15 test cases for NR-U scenario and define proper applicability rules for these requirements.

Proposal 2: Define demodulation requirements for the corresponding scenarios, but these requirements can be applied for other scenarios. Meanwhile, only define requirements for single carrier and don’t define requirements for intra-band CA.

Proposal 3: Do not consider mode 2 transmission of Wideband operation 2 during the NR-U BS demodulation discussion.

Proposal 4: Do not define requirements for Wideband Operation 1 specially. The requirement for 20MHz can be used for either Wideband Operation 1 or 2.

Proposal 5: Reuse Rel-15 demodulation assumptions as much as possible for NR-U demodulation.

Proposal 6: Define requirements for TDLA30-10 channel model. FFS for TDLB100 and TDLC300.

Proposal 7: Define low Doppler shift for TDLB100 and TDLC300 if we agree to define requirements for them.

Proposal 8: Define PDSCH demodulation requirements with Type A mapping.

Proposal 9: Consider 2ms COT in order to adapt the LTE burst transmission model with suitable number of possible slot length configurations

Proposal 10: Agree to reuse the LTE values for S2 configuration

Proposal 11: Define PDCCH, and CQI requirements with adaptations to the burst transmission model.

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

**R4-2015986 Discussion on NR-U General aspects**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Abstract:**

Proposal 1: Do not introduce COT duration in the RAN4 demodulation tests

Proposal 2: RAN4 to define demodulation requirements for Scenario C and make them applicable for other NR-U scenarios

Proposal 3: Do not define NR-U PDCCH demodulation requirements

Observation 1: To define requirements for the specific mode of wideband operation LBT failure model is required

Proposal 4: RAN4 to define demodulation requirements for the wideband operation which are agnostic to the mode of wideband operation

Proposal 5: RAN4 to define requirements for bandwidth equal to 60MHz.

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

**R4-2016063 DL Transmission Model Definition for NR-U Demod Performances**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

Describe in detail our proposal for the NR-U DL Transmission Model to be used for Demod Performance.

Proposal 1: Specify the DL Transmission Model for NR Unlicensed for SCS30kHz only.

Proposal 2: Define the DL Transmission Model for NR Unlicensed as specified in this paper in Section 2.2, Steps 1)-7). The model is summarized here for clarity:

-Compute COT and Unoccupied duration as specified by Test Parameters, then repeat it periodically for the entire test;

- Fully allocate PDCCH and PDSCH in COT, except for Guard and UL Symbols at the end of COT as specified by Test Parameters;

-Use a threshold pLBT to control randomized LBT failures;

Proposal 3: Use the base Slot Pattern shown in Figure 2.3 1, created according to the Model presented in this paper, for NR Unlicensed Demod Performance Tests for 30kHz SCS.

Proposal 4: Specify a single LBT model that covers Data and SSB.

Proposal 5: Model LBT as described by the model presented in this paper, section 2.3. Use pLBT = 0 (always clear channel) for Scenario C Tests and pLBT = [TBD>0] (some probability of occupied channel) for Scenario A Tests.

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

##### 7.1.8.2 UE demodulation requirements [NR\_unlic-Perf]

###### 7.1.8.2.1 PDSCH requirements [NR\_unlic-Perf]

**R4-2015634 Discussion on NR-U PDSCH performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

**R4-2015987 Discussion on NR-U PDSCH requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Abstract:**

Proposal 1: For NR-U demodulation tests, burst length shall be defined as the number of slots rather than the number of subframes. We propose to use fixed S1 in units of slots for each SCS: {1, 3, 5, 8} for 15MHz SCS and {1, 6, 10, 16} for 30MHz SCS.

Proposal 2: For NR-U demodulation test, the starting position for the first slot is randomly selected from OFDM symbol 0 and OFDM symbol 7 with equal probability. If symbol 0 was selected PDSCH Type-A mapping should be used for all slots in the burst. If symbol 7 was selected – PDSCH Type-B mapping with the duration equal to 4 symbols should be used for the first slot and, PDSCH Type-A mapping should be used for all remaining slots in the burst.

Proposal 3: For NR-U demodulation test, PDSCH Type-B mapping with corresponding durations to be used for all slots in case if UE supports typeB-PDSCH-length-r16.

Proposal 4: For NR-U demodulation tests, we propose to define fixed S2 – {6, 9, 12, 14}.

Proposal 5: Do not model LBT failure.

Proposal 6: Consider COT duration equal to single burst transmission duration.

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

**R4-2016064 Simulation Assumptions for NR-U PDSCH Demodulation Performance Tests**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

Present a proposal for the simulation assumptions to be used in NR Unlicensed PDSCH Demod Performance test.

Proposal 1: For NR-U PDSCH Demod Performance Tests use the common test parameters from licensed NR PDSCH Demod Performance as a starting point.

Proposal 2: To define NR-U PDSCH Demod Performance Tests, use the DL Transmission model Parameters in Table 2.2-4 in the Simulation Assumptions.

Proposal 3: To define the prioritized test for NR-U PDSCH Demod Performance Tests, for both Channel Access parameters ’ChannelAccessType-r16’=semistatic and ’ChannelAccessType-r16’=dynamic, use the simulation assumptions listed in this paper, in Tables 2.1-1, 2.2-2, 2.2-3 and Table 2.2-4.

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

**R4-2016089 Discussion on NR-U PDSCH demodulation requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper provides our views on PDSCH demodulation requirements for NR-U.

Proposal 1: Define PDSCH demodulation test cases for both Scenario A, and Scenario C.

Proposal 2: Adapt the test setup from LTE LAA for Scenario A

Proposal 3: Use 30kHz numerology as baseline for NR-U demodulation test cases.

Proposal 4: Use low delay spread and doppler speeds for propagation channels e.g. TDLA30.

Proposal 5: Use Table 1 parameters as starting point for NR-U PDSCH simulation assumptions.

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

###### 7.1.8.2.2 PDCCH requirements [NR\_unlic-Perf]

**R4-2015635 Discussion on NR-U PDCCH performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: No PDCCH demodulation requirements are needed to define for Rel-16 NR-U.

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

**R4-2016090 Discussion on NR-U PDCCH demodulation requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper provides our views on PDCCH demodulation requirements for NR-U.

Observation 1: PDCCH performance requirements from Rel-15 have not been verified under burst-like transmission

Observation 2: Probability of missed scheduling grant is not captured by Rel-15 eMBB PDCCH requirements.

Proposal 1: Use the simulation assumptions from Table 1 as baseline for PDCCH NR-U demodulation requirements

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

##### 7.1.8.3 CSI requirements [NR\_unlic-Perf]

**R4-2015636 Discussion on NR-U CSI requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: Introduce CQI requirements for NR-U for following UE behavior:

 UE does not average the channel measurement across the different transmission bursts

 UE does the CSI measurement by using the valid slots when the transmission varies burst by burst.

Proposal 2: Set two sets of burst transmissions, each with distinct transmission power level and keeping the interference level constant during the test. The SNR is quite different.

 Use aperiodic CSI reporting

 CA scenario can be used as baseline. PCell (license band) is used for HARQ ACK/NACK feedback and aperiodic CSI triggering/reporting.

 CQI distribute criterion and BLER criterion can be used as test metric

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

**R4-2016091 Discussion on NR-U CSI performance requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper provides our views on CSI performance requirements for NR-U.

Observation: Scenario A share similarities with CA CQI requirements, and Scenario C share similarities with SA CQI requirements.

Proposal: Use the simulation assumptions from Table 1 as baseline for NR-U CQI performance requirements.

**Discussion:**

See email discussion summary for [97e][315] NR\_unlic\_Demod\_UE in R4-2017413.

**Decision:** The document was **noted**.

##### 7.1.8.4 BS demodulation requirements [NR\_unlic-Perf]

**R4-2015117 View on BS demodulation requirement for NR-U**

*Type: discussion For: Discussion  
 Source: Samsung*

**Abstract:**

Proposal 1: Define demodulation requirements only for Scenario A (LAA), but these requirements can be applied for other scenarios. Meanwhile, only define requirements for single carrier and don’t define requirements for intra-band CA.

Proposal 2: Define the demodulation requirement with 20 MHz CBW with TDD 15 KHz and 30 KHz, only one SCS can be tested.

Proposal 3: Do not define requirements for wideband operation 1.

Proposal 4: Do not define requirements for GC-UCI multiplexing on PUSCH

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **noted**.

###### 7.1.8.4.1 PUSCH requirements [NR\_unlic-Perf]

**R4-2014941 PUSCH Demodulation performance requirements for operation in unlicensed bands**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Proposal 1: RAN4 to consider only 1 interlace allocation for PUSCH performance requirements.

Proposal 2: RAN4 to define wideband performance requirements for 20, 40, 60, and 80 MHz.

Proposal 3: Depending on vendor declaration, define that a BS is only required to perform tests for 20 MHz and the largest supported bandwidth.

Proposal 4: RAN4 to define BS demodulation requirements for CG-UCI multiplexed on PUSCH, if demodulation impact is identified.

Proposal 5: RAN4 to consider the following parameters as baseline the definition of PUSCH BS demodulation requirements

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **noted**.

**R4-2015637 Discussion on NR-U PUSCH performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: Define the BS requirements only for scenario A. i.e. Carrier aggregation between licensed band NR and unlicensed band NR-U.

Proposal 2: Define the performance requirements per CC only for scenario A. For the performance requirement of PCell, reuse it from NR Rel-15. For the performance requirement of SCell, define the case with bandwidth of 20MHz, 40MHz, 60MHz and 80MHz.

Proposal 3: No need to define the BS requirement for wideband operation 1

Proposal 4: Set intra cell guard size to 0 for PUSCH requirements.

Proposal 5: Introduce the performance requirements for CG-UCI when it is multiplexing on PUSCH with interlaced resource allocation and no HARQ-ACK, CSI part 1, CSI part 2 are existed.

Proposal 6: Use Table 1 as simulation assumptions

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **noted**.

**R4-2015852 discussion on NR-U PUSCH demodulation assumptions**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on NR-U PUSCH demodulation assumptions.

Proposal 1: Only consider 20MHz bandwidth for NR-U PUSCH requirement.

Proposal 2: Using single interlace with 10 PRBs for NR-U PUSCH demodulation simulation.

Proposal 3: Consider following assumptions for NR-U PUSCH demodulation simulation.

Proposal 4: Consider introduce a Rel-15 requirement for HARQ-ACK multiplexing on PUSCH with more than 2 HARQ-ACK information bits and using it to cover CG-UCI multiplexing on CG-PUSCH in NR-U scenario with proper applicability rule.

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **noted**.

**R4-2015988 Discussion on NR-U PUSCH requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Abstract:**

Proposal 1: RAN4 to define demodulation requirements for PRB-Interlaced PUSCH Resource Allocation considering single interlace.

Proposal 2: Do not define requirements for UCI multiplexed on PUSCH

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **noted**.

###### 7.1.8.4.2 PUCCH requirements [NR\_unlic-Perf]

**R4-2014942 PUCCH Demodulation performance requirements for operation in unlicensed bands**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Proposal 1: RAN4 to define demodulation requirements to all interlaced PUCCH formats (i.e. formats 0, 1, 2, and 3), with NR-U specific applicability rule for the new formats.

Proposal 2: RAN4 to define performance requirements only for 1 interlace PUCCH.

Proposal 3: RAN4 to consider NR-U PUCCH performance requirements without frequency hopping.

Proposal 4: RAN4 to consider QPSK modulation order tor NR-U PUCCH formats 2 and 3.

Proposal 5: RAN4 to consider Rel.15 PUCCH requirements as a baseline for the discussion of the NR-U PUCCH test scenarios as in the table below:

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **noted**.

**R4-2015638 Discussion on NR-U PUCCH performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: Define the requirements for PRB-interlaced PUCCH resource allocation with following simulation setups:

 PF0/1/2/3

 Both 15 kHz and 30 kHz

 Test applicability rules:

 Unless otherwise stated, PUCCH requirement tests shall apply only for each PUCCH format declared to be supported

 Unless otherwise stated, PUCCH requirement tests shall apply only for each subcarrier spacing declared to be supported

Proposal 2: Only test one interlace and use interlace index 0 for PF0/1/2/3.

Proposal 3: Not configure frequency hopping for all cases.

Proposal 4: Use 1T4R for all cases.

Proposal 5: Use Table 2~Table 5 as simulation assumptions for performance requirements for NR-U PF0/1/2/3 respectively

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **noted**.

**R4-2015853 discussion on NR-U PUCCH demodulation assumptions**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on NR-U PUCCH demodulation assumptions.

Proposal 1: Introduce requirements for PUCCH enhanced format 0/1/2/3.

Proposal 2: Introduce NR-U PUCCH requirements with single interlace for enhanced format 0/1/2/3.

Proposal 3: Introduce NR-U PUCCH requirements with 2 discontinuous interlaces for enhanced format 2/3.

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **noted**.

**R4-2015989 Discussion on NR-U PUCCH requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Abstract:**

Proposal 1: RAN4 to define demodulation requirements for PRB-Interlaced PUCCH Resource Allocation considering single interlace.

Proposal 2: RAN4 to define demodulation requirements for PDCCH enhanced formats 0/1/2/3

Proposal 3: For EPF 0/1/2/3 performance requirements RAN4 to reuse test configurations of Rel-15 PF 0/1/2/3 keeping only BW = 20MHz

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **noted**.

###### 7.1.8.4.3 PRACH requirements [NR\_unlic-Perf]

**R4-2014943 PRACH Demodulation performance requirements for operation in unlicensed bands**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Proposal 1: RAN4 to define NR-U BS demodulation performance requirements for 15 kHz and 30 kHz and formats A2, B4, and C2.

Proposal 2: RAN4 to consider Rel. 15 PRACH for Normal Mode testing parameters as a baseline for the discussion on the parameters for NR-U performance requirements as in the table below:

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **noted**.

**R4-2015639 Discussion on NR-U PRACH performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: Define the performance requirements for wideband PRACH with following assumptions:

 Sequence length: LRA=1151 for 15kHz and LRA=571 for 30kHz

 Format: B4, C2

 Ncs: 164 for LRA=1151 and 190 for LRA=571

 Logic root sequence index: 0

 v: 0

 Propagation conditions and CFO: AWGN and TDLA 30-10 with 600Hz CFO

 Antenna configuration: 1T4R

 Time error tolerance and test metric are reused from Rel-15 NR PRACH.

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **noted**.

**R4-2015854 discussion on NR-U PRACH demodulation assumptions**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on NR-U PRACH demodulation assumptions.

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **noted**.

**R4-2015990 Discussion on NR-U PRACH requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Abstract:**

Proposal 1: RAN4 to define the performance requirements for both LRA = 1151 and LRA = 571 preamble length.

Proposal 2: RAN4 to define new test preambles

Proposal 3: For NR-U PRACH performance requirements RAN4 to reuse the test configuration parameters used for Rel-15 LRA = 139 preamble

Proposal 4: For NR-U PRACH performance requirements RAN4 to keep using existing test metrics: the false alarm probability shall be less than or equal to 0.1% and the probability of detection shall be equal to or exceed 99%

**Discussion:**

See email discussion summary for [97e][316] NR\_unlic\_Demod\_BS in R4-2017414.

**Decision:** The document was **noted**.

### 7.2 NR mobility enhancement [NR\_Mob\_enh]

**R4-2017006 Email discussion summary for [97e][207] NR\_Mob\_enh\_RRM**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [97e][207] NR\_Mob\_enh\_RRM. The email thread was moderated by Qiming Li (Intel) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017277**.

**R4-2017277 Email discussion summary for [97e][207] NR\_Mob\_enh\_RRM**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2017006)

**Discussion:**

The contribution summarized email discussion thread [97e][207] NR\_Mob\_enh\_RRM. The email thread was moderated by Qiming Li (Intel) and treated during RRM session chaired by Andrey Chervyakov (Intel).

1st round email discussion conclusions

**Topic #1: Core requirements maintenance**

Issue 1-2: NRX-TX and NTX-RX values in Note 2 and 3 in table of sync condition

Agreement

* RAN4 is to change NRX-TX and NTX-RX to 25600 Tc in notes 2 and 3 in table of sync condition.

Issue 1-4: Tprocessing in conditional PSCell change

Agreement

* RAN4 is to specify Tprocessing as follows: Tprocessing = 20 ms when source and target cells are in the same FR, and Tprocessing = 40 ms when source and target cells are in different FRs.

**Topic #2: Performance part**

Issue 2-1: Test applicability for DAPS handover

Agreement

* RAN4 to further split test applicability for DAPS handover to cover intra-frequency, intra-band inter-frequency and inter-band inter-frequency respectively
  + To verify intra-frequency DAPS handover requirements
    - The UE capable of intra-frequency asynchronous DAPS handover on any band needs to be tested only in asynchronous scenario.
    - The UE not capable of intra-frequency asynchronous DAPS handover on any band but capable of synchronous DAPS handover on some band needs to be tested only in synchronous scenario.
  + To verify intra-band inter-frequency DAPS handover requirements
    - The UE capable of intra-band inter-frequency asynchronous DAPS handover on any band needs to be tested only in asynchronous scenario.
    - The UE not capable of intra-band inter-frequency asynchronous DAPS handover on any band but capable of intra-band inter-frequency synchronous DAPS handover on some band needs to be tested only in synchronous scenario.
  + To verify inter-band inter-frequency DAPS handover requirements
    - The UE capable of inter-band inter-frequency asynchronous DAPS handover on any band combination needs to be tested only in asynchronous scenario.
    - The UE not capable of inter-band inter-frequency asynchronous DAPS handover on any band combination but capable of inter-band inter-frequency synchronous DAPS handover on some band combination needs to be tested only in synchronous scenario.

GTW session (November 10, 2020)

Moderator: No open issues for Perf part and CRs are being finalized.

Issue 1-3: further clarification on DL-to-UL and UL-to-DL switching time

Chair: continue discussion

**Decision:** The document was **noted**.

**R4-2017093 WF on NR mobility enhancement**

*Type: other For: discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **approved**.

#### 7.2.1 RRM core requirements maintenance (38.133) [NR\_Mob\_enh-Core]

**R4-2014357 Discussion on dual active protocol stack handover**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Abstract:**

Proposal 1: For asynchronous intra-frequency DAPS handover and asynchronous intra-band inter-frequency DAPS handover, demodulation performance degradation might happen on any single symbol of the first 3 symbols of a slot. There is no UE requirement expected if MRTD is larger than 3 OFDM symbol length.

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **noted**.

**R4-2014358 CR on TS38.133 for dual active protocol stack handover**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1155 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

For asynchronous intra-frequency DAPS handover and asynchronous intra-band inter-frequency DAPS handover, demodulation performance degradation might happen on any single symbol of a slot

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **revised to R4-2017094**.

**R4-2017094 CR on TS38.133 for dual active protocol stack handover**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1155 rev 1 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

(Replaces R4-2014358)

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **agreed**.

**R4-2015167 AGC operation in async intra-frequency DAPS HO**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this paper we discuss issue 1-1 from [1].

• Issue 1-1: demodulation performance degradation for async intra-frequency DAPS handover and async intra-band inter-frequency DAPS handover

How to capture the performance degradation for asynchronous cases ne

Proposal 1: During async intra-frequency DAPS handover and async intra-band inter-frequency DAPS handover, interruptions may occur depending on UE implementation. The duration and frequency of occurrence of such interruptions is not specified

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **noted**.

**R4-2015168 Corrections to DAPS requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1239 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Editor’s note in specification needs to be addressed

Editor note: how to capture the performance degradation for asynchronous cases needs to be further studied

Typo exists in definition of sync condition for DAPS HO in FR1.

It is stated that

Note 2:For DAPS handover on a TDD band, a UE is not expected to transmit in the uplink earlier than NRX-TX after the end of the last received downlink symbol in the same cell where NRX-TX=26500Tc.

Note 3:For DAPS handover on a TDD band, a UE is not expected to receive in the downlink earlier than NTX-RX after the end of the last transmitted uplink symbol in the same cell where NTX-RX=26500Tc.

Taking these notes along with NTA,offset = 25600 Tc it is not possible to simultaneously have NRX-TX≥26500 and NTX-RX≥26500 regardless of NTA

The correct values of NRX-TX and NTX-RX should be aligned with those in 38.211

Table 4.3.2-3: Transition time and

Transition time

FR1

FR2

25600

13792

25600

13792

Thee value 26500Tc is a typo with swapped digits, and should be 25600Tc

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **postponed**.

**R4-2017095 Corrections to DAPS requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1239 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **withdrawn**.

**R4-2015464 CR on maintaining DAPS handover requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1272 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For FR1 DAPS hadover, the synchronous conditions are defined with adding 3 notes. In current specification, Notes 2/3 clairfies to leave enough time for UE performing DL-to-UL and UL-to-DL switching only from single cell perspective. However, the UE shall be allowed to switching time between both source cell and target cell.

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **postponed**.

**R4-2016016 CR 38.133 Corrections to Conditional PSCell Change delay requirement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1346 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The delay requirement for Conditional PSCell Change does not distinguish between whether source and target PSCells are in same or different FRs. For PSCell change (clause 8.11), the following SW-related processing times are specified:

-Tprocessing = 20 ms when source and target cells are in the same FR,

-Tprocessing = 40 ms when source and target cells are in different FRs.

The purpose of this CR is to correct the misalignment.

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **agreed**.

#### 7.2.2 RRM perf. requirements (38.133) [NR\_Mob\_enh-Perf]

##### 7.2.2.1 General [NR\_Mob\_enh-Perf]

**R4-2014222 Discussion on DAPS HO test applicability**

*Type: discussion For: Discussion  
 Source: Apple*

**Abstract:**

Proposal 1: RAN4 to further split test applicability for DAPS handover to cover intra-frequency, intra-band inter-frequency and inter-band inter-frequency respectively.

Proposal 2: update the test applicability for DAPS handover.

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **noted**.

**R4-2014223 CR for DAPS HO test applicability**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1138 Cat: F (Rel-16)  
  
 Source: Apple*

**Abstract:**

RAN4 agreed to introduce many test cases to verify DAPS handover RRM requirements. The agreed test coverage covers intra-frequency, intra-band inter-frequency and inter-band inter-frequency. Both synchronous and asynchronous delployment are to be tested as well. To save testing time RAN4 aslo agreed to introduce corresponding test applicability to allow UE to skip some of the test cases.

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **agreed**.

##### 7.2.2.2 Test cases [NR\_Mob\_enh-Perf]

**R4-2014580 Intra-band Inter-frequency sync DAPS handover test in SA for FR1**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1187 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Intra-band inter-frequency sync DAPS handover test in SA for FR1 is missing.

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **revised to R4-2017096**.

**R4-2017096 Intra-band Inter-frequency sync DAPS handover test in SA for FR1**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1187 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2014580)

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **revised to R4-2017351**.

**R4-2017351 Intra-band Inter-frequency sync DAPS handover test in SA for FR1**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1187 rev 2 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2017096)

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **agreed**.

**R4-2015169 Conditional handover test cases for NR**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1240 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

In RAN4#95e it was agreed to introduce the testcases for CHO:

7

Conditional intrafrequency handover test in SA for FR1

8

Conditional interfrequency handover test in SA for FR1

11

Conditional intrafrequency handover test in SA for FR2

12

Conditional interfrequency handover test in SA for FR2

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **revised to R4-2017097**.

**R4-2017097 Conditional handover test cases for NR**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1240 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015169)

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **agreed**.

**R4-2015465 Discussion on DAPS handover test cases**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **noted**.

**R4-2015466 DraftCR on inter-band DAPS handover tests**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

According to the agreements in WF [R4-2008585], four types of inter-band DAPS handover tests need to be introduced.

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **revised to R4-2017098**.

**R4-2017098 CR on inter-band DAPS handover tests**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1406 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015466)

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **agreed**.

**R4-2016555 Introduction of intra-frequency sync and async DAPS HO test cases in FR1**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1393 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Per work split agreement in RAN4#95-e, intra-frequency sync and async DAPS HO test cases in FR1 are introduced in this CR. Per agreements in RAN4#96-e, the tests consist of 5 intervals and the last interval is used to verify the CSI reporting to source cell is stopped.

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **revised to R4-2017099**.

**R4-2017099 Introduction of intra-frequency sync and async DAPS HO test cases in FR1**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1393 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2016555)

**Discussion:**

See email discussion summary for [97e][207] NR\_Mob\_enh\_RRM in R4-2017006.

**Decision:** The document was **agreed**.

### 7.3 5G V2X with NR sidelink [5G\_V2X\_NRSL]

#### 7.3.1 General [5G\_V2X\_NRSL]

**R4-2016610 Email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF**

*Type: other For: discussion  
 Source: Moderator (LG Electronics)*

**Discussion:**

The contribution summarized email discussion thread [97e][108] 5G\_V2X\_NRSL\_UE\_RF. The subject for discussion was General, UE TX and RX. The email thread was moderated by Suhwan Lim (LG Electronics France) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016952**.

**R4-2016952 Email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF**

*Type: other For: discussion  
 Source: Moderator (LG Electronics)*

(Replaces R4-2016610)

**Discussion:**

The contribution summarized email discussion thread [97e][108] 5G\_V2X\_NRSL\_UE\_RF. The subject for discussion was General, UE TX and RX. The email thread was moderated by Suhwan Lim (LG Electronics France) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2017811 LS on Rel-16 RAN4 Clarification for UE Antenna Connector Interpretation**

*Type: LS out For: Approval  
 to 5GAA, cc RAN5  
 Source: RAN4*

**Discussion:**

See email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF in R4-2016610.

**Decision:** The document was **approved**.

**R4-2014972 CR on TS38.101-1 for NR V2X**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0525 Cat: F (Rel-16)  
  
 Source: vivo*

**Abstract:**

Con-current band combinations are introduced in TS 38.101-1, and the definition of con-current operation should also be introduced. PC2 related requirements were removed in the last meeting, and the related description should also be removed. Some other editorial errors need revising.

**Discussion:**

See email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF in R4-2016610.

**Decision:** The document was **agreed**.

**R4-2016474 draft CR for 38.101-1 NR V2X FRC**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0566 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Clarification for Alpha value for SCI-2 and sub-channel size of resource pool

**Discussion:**

See email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF in R4-2016610.

**Decision:** The document was **revised to R4-2017822**.

**R4-2017822 CR for 38.101-1 NR V2X FRC**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0566 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016474)

**Discussion:**

See email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF in R4-2016610.

**Decision:** The document was **agreed**.

#### 7.3.2 System parameters maintenance [5G\_V2X\_NRSL-Core]

#### 7.3.3 UE RF requirements maintenance [5G\_V2X\_NRSL-Core]

**R4-2014323 Correction on 5G V2X UE RF requirements in TS38.101-1 in rel-16**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0498 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

**Abstract:**

This CR is to update UE-to-UE coexistence requirmeents for 5G V2X UE in TS38.101-1.

**Discussion:**

See email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF in R4-2016610.

**Decision:** The document was **revised to R4-2016803**.

**R4-2016803 Correction on 5G V2X UE RF requirements in TS38.101-1 in rel-16**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0498 rev 1 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

(Replaces R4-2014323)

**Discussion:**

See email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF in R4-2016610.

**Decision:** The document was **agreed**.

**R4-2014325 Correction on update 5G V2X UE RF requirements in TR38.886**

*Type: CR For: Agreement  
 38.886 v16.1.0 CR-0004 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

**Abstract:**

This CR is to update Tx/Rx RF requirmeents for 5G V2X UE in TR38.886.

**Discussion:**

See email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF in R4-2016610.

**Decision:** The document was **revised to R4-2016804**.

**R4-2016804 Correction on update 5G V2X UE RF requirements in TR38.886**

*Type: CR For: Agreement  
 38.886 v16.1.0 CR-0004 rev 1 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

(Replaces R4-2014325)

**Discussion:**

See email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF in R4-2016610.

**Decision:** The document was **agreed**.

##### 7.3.3.1 Transmitter characteristics [5G\_V2X\_NRSL-Core]

**R4-2014321 UE-to-UE coexistence and other remaining issues for V2X operation**

*Type: other For: Approval  
 Source: LG Electronics France*

**Discussion:**

See email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF in R4-2016610.

**Decision:** The document was **noted**.

**R4-2015333 CR on V2X bands reference table**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0535 Cat: F (Rel-16)  
  
 Source: OPPO*

**Abstract:**

The reference table 5.2E-1for V2X bands does not exist.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF in R4-2016610.

**Decision:** The document was **revised to R4-2016805**.

**R4-2016805 CR on V2X bands reference table**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0535 rev 1 Cat: F (Rel-16)  
  
 Source: OPPO*

(Replaces R4-2015333)

**Discussion:**

See email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF in R4-2016610.

**Decision:** The document was **agreed**.

**R4-2016447 Revision of inter-band V2X con-currency table for V2X\_n71A\_n47A**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0561 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

The con-currency table for V2X\_n71A-n47A has to be updated

**Discussion:**

See email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF in R4-2016610.

**Decision:** The document was **not pursued**.

##### 7.3.3.2 Receiver characteristics [5G\_V2X\_NRSL-Core]

**R4-2016446 Revised V2X FRC tables**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0560 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Current FRC tables in 38.101-1 sets PSCCH PRBs=10 for all allocated resource block lengths. This leads to cases where the PSCCH is smaller than a sub-channel for sub-channel sizes 12 and 15.

According to RAN1 when the sub-channel size is <20 PRBs and the size of the PSCCH is less than the sub-channel size, a UE is not expected to choose a PSSCH DMRS pattern to be transmitted in the same OFDM symbol with PSCCH.

Such a configurations limits the ability of the UE to use anything except the 2-symbol DMRS pattern with sub-channel sizes of 12 and 15 PRBs, placing signficiant restrictions on the overall system and could lead to performance degradation in moderate and high Doppler scenarios. Therefore, it is best to avoid using such a configuration.

This CR proposes a FRC configuration where the number of PSCCH PRBs is set equal to the subchannel size for sub-channel sizes <20. This allows PSSCH DMRS to be transmitted in the same OFDM symbol with PSSCH.

This permits more DMRS symbols per slot which will gives better performance in moderate and high doppler scenarios.

Additionally, some parameters that are required to calculate the TBS and decode the TB are missing. This CR introduces those parameters.

**Discussion:**

See email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF in R4-2016610.

**Decision:** The document was **not pursued**.

#### 7.3.4 Concurrent operation maintenance (scenarios, requirements, etc) [5G\_V2X\_NRSL-Core]

**R4-2016611 Email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent. The subject for discussion was UE concurrent operation. The email thread was moderated by Ye Liu (Huawei Technologies France) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016953**.

**R4-2016953 Email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2016611)

**Discussion:**

The contribution summarized email discussion thread [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent. The subject for discussion was UE concurrent operation. The email thread was moderated by Ye Liu (Huawei Technologies France) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016806 WF on SL switching period**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **approved**.

**R4-2016807 LS on SL switching priority**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **revised to R4-2017839**.

**R4-2017839 LS on SL switching priority**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: RAN4*

(Replaces R4-2016807)

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **approved**.

**R4-2014324 Correction on 5G V2X inter-band con-current UE RF requirements in TS38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0363 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

**Abstract:**

This CR is to update Tx/Rx RF requirmeents for 5G V2X UE in TS38.101-3.

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **revised to R4-2016810**.

**R4-2016810 Correction on 5G V2X inter-band con-current UE RF requirements in TS38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0363 rev 1 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

(Replaces R4-2014324)

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **agreed**.

##### 7.3.4.1 Transmitter characteristics [5G\_V2X\_NRSL-Core]

**R4-2014414 Discussion on switching period for NR V2X in ITS band**

*Type: discussion For: Approval  
 Source: CATT*

**Abstract:**

Proposal 1: To eliminate the performance impact, it is proposed to place the switching time including transient periods in one separate slot between LTE subframe and NR slot. The separate slot is dedicated to the switching time with each transient period located at the head part and tail part of the slot. The switching period 120 us is placed within the slot excluding where the transient periods are located.

Proposal 2: To specify the time masks for the switching between LTE SL and NR SL in Figure 1 and Figure 2.

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **noted**.

**R4-2014416 CR for 38.886, Time mask for TDM between NR V2X and LTE V2X in ITS band**

*Type: CR For: Agreement  
 38.886 v16.1.0 CR-0005 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

The time mask for TDM operation between NR SL and LTE SL at n47 should be introduced in 38.886.

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **revised to R4-2016809**.

**R4-2016809 CR for 38.886, Time mask for TDM between NR V2X and LTE V2X in ITS band**

*Type: CR For: Agreement  
 38.886 v16.1.0 CR-0005 rev 1 Cat: F (Rel-16)  
  
 Source: CATT*

(Replaces R4-2014416)

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **agreed**.

**R4-2014596 General corrections for V2X sections in 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0368 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Some NR V2X section numbers have been denoted with suffix C. It was agreed that all NR V2X sections numbers will be denoted with suffix E. Also,in some instances the cross-referencing between NR V2X sections in 38.101-3 and 38.101-1 is not correct and needs to be fixed.

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **revised to R4-2016811**.

**R4-2016811 General corrections for V2X sections in 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0368 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2014596)

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **agreed**.

**R4-2014641 NR V2X inter-RAT Tx switch**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **noted**.

**R4-2014971 Further discussion on switching period for NR V2X**

*Type: discussion For: Approval  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **noted**.

**R4-2015253 CR for TS 38.101-3 switching period for V2X con-current operation**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0284 Cat: F (Rel-16)  
  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **withdrawn**.

**R4-2015257 on switching period**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Abstract:**

Proposal: To agree the switching period location with the usage of priority determined by the SCI formats scheduling the transmission as following：

1. If the UE has known the priority of LTE sidelink and NR sidelink before the switching then the switching period can be located in the slot/sub-frame of the lower priority sidelink.

2. If the UE doesn’t know the priority of the two sidelink or the priority is the same, then it is up to UE implementation to chose where to locate the switching period.

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **noted**.

**R4-2015267 CR for TS 38.101-3 switching period for V2X con-current operation**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0389 Cat: F (Rel-16)  
  
 Source: Beijing Xiaomi Electronics*

**Abstract:**

The switching period of V2X con-current operation has not been added in the specification. This CR is to complete this part.

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **not pursued**.

**R4-2016475 On NR V2X switching period**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Abstract:**

Observation 1: No clear benefit for a longer switching time under the scheduling restriction condition.

Observation 2: The whole switching period together with transient period should be put on one side on LTE subframe or NR slot to avoid more wasted resource.

Observation 3: It’s not reasonable to put the switching period only at the NR V2X side.

Observation 4: Due to the scheduling restriction, no essential difference for options to put the switching period at either LTE sub-frame or NR slot.

Proposal: It is proposed to agree on the time masks for switching between E-UTRA SL and NR SL in the slot/SF on the RAT UE switches from.

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **noted**.

**R4-2016476 draft correction CR for TS 38.101-3: NR V2X con-current operation**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0417 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

There are some remaining issues are left to be finished for NR V2X con-current operation.

Tx: switching period requirement

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **not pursued**.

##### 7.3.4.2 Receiver characteristics [5G\_V2X\_NRSL-Core]

**R4-2014322 MSD Analysis results and harmonic reduction filter for V2X\_20A\_n38A**

*Type: other For: Approval  
 Source: LG Electronics France*

**Abstract:**

Proposal 1: RAN4 need to align the RF architecture for DC\_20\_n38 and V2X\_20\_n38. Based on the aligned RF architecture, RAN4 can decide the same additional ILs for both DC\_20\_n38 UE and V2X\_20\_n38 UE.

Proposal 2: RAN4 specify MSD levels for 10MHz CBW with 10.7dB = (10.3dB + 11.0dB)/2 based on shared antenna RF architecture with HTF for both DC\_20\_n38 UE and V2X\_20\_n38 UE.

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **noted**.

**R4-2014415 CR for TS 38.101-3, Time mask for TDM operation between NR V2X and LTE V2X in ITS band**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0364 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

V2X\_47-n47 is operated with TDM mode and should not be considered as con-current operation.

The output power dynamics requirements for NR V2X should be introduced in TS 38.101-3.

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **revised to R4-2016808**.

**R4-2016808 CR for TS 38.101-3, Time mask for TDM operation between NR V2X and LTE V2X in ITS band**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0364 rev 1 Cat: F (Rel-16)  
  
 Source: CATT*

(Replaces R4-2014415)

**Discussion:**

See email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent in R4-2016611.

**Decision:** The document was **agreed**.

#### 7.3.5 RRM core requirements maintenance (38.133) [5G\_V2X\_NRSL-Core]

**R4-2017007 Email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM**

*Type: other For: discussion  
 Source: Moderator (LG Electronics)*

**Discussion:**

The contribution summarized email discussion thread [97e][208] 5G\_V2X\_NRSL\_RRM. The email thread was moderated by Yoonoh Yang (LG Electronics Inc.) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017278**.

**R4-2017278 Email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM**

*Type: other For: discussion  
 Source: Moderator (LG Electronics)*

(Replaces R4-2017007)

**Discussion:**

The contribution summarized email discussion thread [97e][208] 5G\_V2X\_NRSL\_RRM. The email thread was moderated by Yoonoh Yang (LG Electronics Inc.) and treated during RRM session chaired by Andrey Chervyakov (Intel).

GTW session (November 04, 2020)

Topic #1: Interruption requirements

* 1-1: Interruption to WAN for switching between LTE SL and NR SL
  + Option 1: Define the interruption requirement with following table (LGE, QC, Xiaomi, MTK)

|  |  |  |
| --- | --- | --- |
|  | Slot length (ms) | Interruption length (slot) |
| 0 | 1 | 2 |
| 1 | 0.5 | 2 |
| 2 | 0.25 | 2 |
| 3 | 0.125 | 3 |

* + Option 2: No interruptions (Huawei)

Discussion:

HW: no technical reasons to have interruptions. The PLL is not shared.

QC: The PLL is not shared but some buffers and circuits may be affected. Also it is needed for future proof.

MTK: Do not agree with HW. For NR-U there are interruptions and same principles can apply for V2X.

HW: NR-U is different from V2X. In Rel-16 bands there is no need for interruptions.

LGE: we already specified some interruptions for inter-band CA and same principles should apply

HW: switching between LTE SL and NR SL can be frequent and there may be big impact on Uu performance.

QC: Interruptions exist due to shared components in RFFE. Switching between LTE SL and NR SL may not be very frequent.

MTK: the switching will not be frequent

Xiaomi: Option 1

HW: do not understand how shared buffer have impact. To Xiaomi – the oscillator is shared but it does not need interruption due to SL switching.

HW: Object to Option 1.

* 1-2: Whether to define interruption requirement on LTE SL due to NR SL sync source is changed.
  + Option 1: Not Define in Rel-16 (LGE, Xiaomi)
  + Option 2: Define the interruption to LTE SL due to NR SL sync. source change in TS38.133 (QC, MTK)
    - For NR V2X UE not supporting gNB/eNB as synchronization reference source, UE is allowed to drop E-UTRA V2X SL transmission or reception, and NR V2X SL transmission or reception for up to 1ms when synchronization source is changed:
    - For NR V2X UE supporting gNB/eNB as synchronization reference source, UE is allowed to drop E-UTRA V2X SL transmission or reception, and NR V2X SL transmission or reception for up to 1ms when synchronization source is changed:
  + Option 3: Discuss this issue later after hearing from RAN1. (ZTE)
    - For this, send LS to RAN1 to ask about the specific UE behavior when sync source is changed for NR SL, at least to trigger the discussion there and help to form common understanding in RAN4

Discussion:

QC: in email discussion ZTE mentioned that they are fine not to send LS.

MTK: Option 2. LTE SL needs to adjust its timing in case NR SL sync source changes. Based on RAN1 agreement LTE SL timing shall follow NR SL timing.

LGE: We have different understanding. NR SL is aligned with LTE SL subframe boundary. The RAN1 specs does not force LTE SL to follow NR SL timing.

Xiaomi: Same view as LGE. We don’t need to define the interruption on LTE SL since it is broadcast.

QC: LTE SL and NR SL subframe boundaries are aligned. Whenever NR SL sync source changes both timings should be changed.

Xiaomi: if we introduce the requirement, how can we verify it?

MTK: we did not have a test case in LTE as well. So it is not a problem.

LGE: Our interpretation is that NR SL timing shall follow LTE SL timing.

QC: the interruption will be there disregards whether NR follow LTE or LTE follows NR. Prefer to keep this in RAN4.

LGE: need time to check.

Chair: Continue the discussion. Further clarify correct UE behavior in terms of TX timing.

Topic #3: Test Cases

* Issue 3-4-1: Test Set-up when GNSS is configured as the highest priority
  + Option 1: 3 SyncRef UEs (**ZTE, Huawei**)
* SyncRef UE1 (sync to gNB directly), SyncRef UE2 (sync to GNSS in-directly) and SyncRef UE3 (sync to GNSS directly).
  + Option 2: 2 SyncRef UEs (**LGE, QC, Xiaomi**)
* SyncRef UE1 (sync to GNSS in-directly) and SyncRef UE2 (sync to GNSS directly).

Discussion:

QC: functionally these are quite similar. 1 pair is enough.

HW: two types of test cases with gNB and GNSS configured as the highest priority. For GNSS with the highest priority case it is important to ensure that UE does not select SyncRefUE synchronized to gNB.

ZTE: Agree with Huawei.

LGE: Option 2.

Chair: Continue discussion. In case of no impact on UE implementation can the Option 1 be considered as a compromise?

1st round email discussion conclusions

**Topic #1: Interruption requirements**

**Topic #2: Measurement accuracy and side condition**

Absolute accuracy of L1 SL-RSRP measurement

Agreement

* Define ±4.5dB as absolute measurement accuracy of L1 SL-RSRP at SNR=0dB when measured at UE antenna connector.

NR V2X operating bands

Agreement

* Introduce NR\_TDD\_FR1\_B for n38 and NR\_TDD\_FR1\_J for n47 for NR V2X operating bands.

Minimum NR V2X RPs related to side condition (Annex.B)

Agreement

* Define minimum NR V2X RPs for different SCSs in Annex B.4 based on the following values.
  + For NR\_TDD\_FR1\_B
    - -126.5 dBm/15kHz , -123.5dBm/30kHz, -120.5dBm/60kHz @ Es/Iot ≥ -6 dB
    - -120.5 dBm/15kHz , -117.5dBm/30kHz, -114.5dBm/60kHz @ Es/Iot ≥ 0 dB
  + For NR\_TDD\_FR1\_J
    - -122.5 dBm/15kHz , -119.5dBm/30kHz, -116.5dBm/60kHz @ Es/Iot ≥ -6 dB
    - -116.5 dBm/15kHz , -113.5dBm/30kHz, -110.5dBm/60kHz @ Es/Iot ≥ 0 dB

**Topic #3: Test Cases**

Common resource pool configuration

Agreement

* Configure one Rx resource pool and one normal Tx resource pool
* Configure subchannel size with 10RB
* Configure Sensing window with 100ms

Test for V2X UE Resource Pre-emption

Agreement

* Introduce Test for Resource Pre-emption

Test Set-up for V2X UE Resource Re-evaluation

Agreement

* Introduce Test for Resource Re-evaluation (a separated test case from pre-emption test)

**Decision:** The document was **noted**.

**R4-2017100 WF on NR V2X RRM requirements**

*Type: other For: discussion  
 Source: LG Electronics*

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **approved**.

**R4-2014213 On interruption requirement on LTE SL due to changing of NR SL sync source**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

Proposal 1: Send LS to RAN1 to ask about the specific UE behavior when sync source is changed for NR SL, at least to trigger the discussion there and help to form common understanding in RAN4.

Proposal 2: Discuss this issue later after hearing from RAN1.

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **noted**.

**R4-2014294 Discussion of maintenace issues for NR V2X**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Abstract:**

It discusses maintenance issues for NR V2X RRM requirements based on the agreed WF in last meeting.

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **noted**.

**R4-2014295 CR of NR V2X operating band group**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1152 Cat: F (Rel-16)  
  
 Source: LG Electronics Inc.*

**Abstract:**

Introduce NR V2X operating band group in 3.5.

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **revised to R4-2017101**.

**R4-2017101 CR of NR V2X operating band group**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1152 rev 1 Cat: F (Rel-16)  
  
 Source: LG Electronics Inc.*

(Replaces R4-2014295)

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **agreed**.

**R4-2014634 NR V2X RRM core and performance requirement remaining issues**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **noted**.

**R4-2014635 CR: Interruption requirement for NR V2X synchronization source chang**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1191 Cat: F (Rel-16)  
  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **revised to R4-2017345**.

**R4-2017345 CR: Interruption requirement for NR V2X synchronization source chang**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1191 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm, Inc.*

(Replaces R4-2014635)

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **agreed**.

**R4-2014767 Remaining issues on NR V2X RRM requirement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Abstract:**

Proposal 1: The absolute accuracy of L1 SL-RSRP can be ±4.5dB at SNR=0dB unless additional cable loss is agreed to be introduced in V2X UE test.

Proposal 2: When two synchronization sources that UE switches between are not synchronized in NR sidelink, define the interruption to LTE SL due to NR SL sync. source change.

Proposal 3: Define the interruption to NR Uu link due to switching between LTE SL and NR SL. The UE is allowed an interruption on the PCell in NR as follow.

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **noted**.

#### 7.3.6 RRM perf. requirements (38.133) [5G\_V2X\_NRSL-Perf]

**R4-2017105 Draft Big CR: Introduction of Rel-16 NR V2X RRM performance requirements (TS 38.133)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: LG Electronics*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

##### 7.3.6.1 General [5G\_V2X\_NRSL-Perf]

**R4-2014296 CR of NR V2X measurement accuracy requirements(SL-RSSI and L1 SL-RSRP)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1153 Cat: B (Rel-16)  
  
 Source: LG Electronics Inc.*

**Abstract:**

Introduce NR V2X measurement accuracy requirements for SL-RSSI and L1 SL-RSRP

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **revised to R4-2017102**.

**R4-2017102 CR of NR V2X measurement accuracy requirements(SL-RSSI and L1 SL-RSRP)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1153 rev 1 Cat: B (Rel-16)  
  
 Source: LG Electronics Inc.*

(Replaces R4-2014296)

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **endorsed**.

**R4-2014298 CR of Annex.B for NR V2X side conditions**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1154 Cat: B (Rel-16)  
  
 Source: LG Electronics Inc.*

**Abstract:**

Introduce condtions for NR V2X in B.4

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **revised to R4-2017103**.

**R4-2017103 CR of Annex.B for NR V2X side conditions**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1154 rev 1 Cat: B (Rel-16)  
  
 Source: LG Electronics Inc.*

(Replaces R4-2014298)

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **endorsed**.

**R4-2014768 Discussion on L1 SL-RSRP measurement test case**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Abstract:**

Proposal 1: Both re-evaluation and pre-emption test cases shall be defined because they are critical to support aperiodic higher-priority traffic in NR V2X.

Proposal 2: Introducing a warm up duration T0. The test UE configured with resource pools only without the sidelink logical channels.

Proposal 3: RAN4 shall define the test cases related to re-evaluation and pre-emption and they can be merged into one test case.

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **noted**.

##### 7.3.6.2 L1 SL-RSRP measurement accuracy [5G\_V2X\_NRSL-Perf]

**R4-2015467 DraftCR on PSBCH-RSRP accuracy requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

The PSBCH-RSRP accuracy requirements need to be introduced for NR V2X.

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **revised to R4-2017104**.

**R4-2017104 DraftCR on PSBCH-RSRP accuracy requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015467)

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **endorsed**.

##### 7.3.6.3 Test cases [5G\_V2X\_NRSL-Perf]

**R4-2014640 NR V2X RRM test case discussion**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **noted**.

###### 7.3.6.3.1 UE transmit timing [5G\_V2X\_NRSL-Perf]

**R4-2015469 DraftCR on UE Transmission Timing Accuracy Tests for NR V2X**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

UE transmission timing accuracy requirements has been specified for NR V2X, and the corresponding tests shall be defined in TS 38.133.

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **revised to R4-2017106**.

**R4-2017106 DraftCR on UE Transmission Timing Accuracy Tests for NR V2X**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015469)

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **endorsed**.

###### 7.3.6.3.2 Initiation/Cease of SLSS Transmission [5G\_V2X\_NRSL-Perf]

**R4-2014299 draft CR of Test for initiation and cease of SLSS Transmission with V2X Sidelink Communication**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: LG Electronics Inc.*

**Abstract:**

Introduce test case for initiation/cease of SLSS Transmission with V2X Sidelink Communication.

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **revised to R4-2017107**.

**R4-2017107 draft CR of Test for initiation and cease of SLSS Transmission with V2X Sidelink Communication**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: LG Electronics Inc.*

(Replaces R4-2014299)

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **endorsed**.

**R4-2014655 RRM test cases for NR V2X Synchronization Reference Selection/Reselection**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

**Abstract:**

Add the Rel-16 NR V2X Synchronization Reference Selection/Reselection test case

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **revised to R4-2017108**.

**R4-2017108 RRM test cases for NR V2X Synchronization Reference Selection/Reselection**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

(Replaces R4-2014655)

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **endorsed**.

###### 7.3.6.3.3 Selection / Reselection of V2X Synchronization Reference Source [5G\_V2X\_NRSL-Perf]

**R4-2014214 Selection or Reselection of V2X Synchronization Reference Source**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

Observation 1: The able loss introduced by the vehicle antenna can be a major source of noise.

Proposal 1: Test set-up for GNSS with higher priority shall include 3 SyncRef UEs, SyncRef UE1 (sync to gNB directly), SyncRef UE2 (sync to GNSS in-directly) and SyncRef UE3 (sync to GNSS directly).

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **noted**.

###### 7.3.6.3.4 L1 SL-RSRP measurements [5G\_V2X\_NRSL-Perf]

**R4-2014212 On L1 SL-RSRP accuracy for NR V2X**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

Observation 1: The able loss introduced by the vehicle antenna can be a major source of noise.

Proposal 1: Finalize measurement accuracy requirement once RF session concludes on cable loss issue.

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **noted**.

**R4-2014639 CR: RRM autonomous resource selection test cases for NR V2X**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **revised to R4-2017109**.

**R4-2017109 CR: RRM autonomous resource selection test cases for NR V2X**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm, Inc.*

(Replaces R4-2014639)

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **endorsed**.

**R4-2014769 CR on V2X UE Resource Selection Tests for Re-evaluation**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

**Abstract:**

The re-evaluation test is missing.

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **revised to R4-2017110**.

**R4-2017110 CR on V2X UE Resource Selection Tests for Re-evaluation**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

(Replaces R4-2014769)

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **endorsed**.

**R4-2015468 Discussion on UE Autonomous Resource Selection/Reselection Test for NR V2X**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Abstract:**

Proposal 1: For UE autonomous resource selection/reselection test, the test setups are suggested as follows:

- The value of X is configured as 20%

- Active UE and subchannel allocation: there are 40 active UEs in the system, first 10 UEs occupies subchannel 0, the next 10 occupies subchannel 1, the next 10 occupies subchannel 2, following the allocation until all the 40 active UEs are allocated. The subchannels 0/1/2/3 configured for UE to be tested are each occupied by 10 UEs. The subchannel 4 configured for UE to be tested is not occupied by active UEs.

- The active UEs on subchannel 0/1/3 always transmit in 20dB higher RSRP above the threshold (corresponding to 20dB SNR). The active UEs on subchannel 2 transmit with 5dB higher RSRP above the threshold.

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **noted**.

###### 7.3.6.3.5 Congestion control measurements [5G\_V2X\_NRSL-Perf]

**R4-2014770 CR on V2X UE Congestion Control Measurement Test**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

**Abstract:**

The congestion control measurement test is missing.

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **revised to R4-2017111**.

**R4-2017111 CR on V2X UE Congestion Control Measurement Test**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

(Replaces R4-2014770)

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **revised to R4-2017347**.

**R4-2017347 CR on V2X UE Congestion Control Measurement Test**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

(Replaces R4-2017111)

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **endorsed**.

###### 7.3.6.3.6 Interruptions [5G\_V2X\_NRSL-Perf]

**R4-2015470 DraftCR on Interruption Tests for NR V2X**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

The interruption requirements has been specified for NR V2X, and the corresponding tests shall be defined in TS 38.133.

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **revised to R4-2017112**.

**R4-2017112 DraftCR on Interruption Tests for NR V2X**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015470)

**Discussion:**

See email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM in R4-2017007.

**Decision:** The document was **endorsed**.

###### 7.3.6.3.7 Others [5G\_V2X\_NRSL-Perf]

#### 7.3.7 Demodulation and CSI requirements (38.101-4) [5G\_V2X\_NRSL-Perf]

##### 7.3.7.1 General [5G\_V2X\_NRSL-Perf]

**R4-2017415 Email discussion summary for [97e][317] V2X\_Demod\_Part1**

*Type: other For: discussion  
 Source: Moderator (LGE)*

**Discussion:**

The contribution summarized email discussion thread [97e][317] V2X\_Demod\_Part1. The email thread was moderated Jin-yup Hwang (LG Electronics Inc.) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017612**.

**R4-2017612 Email discussion summary for [97e][317] V2X\_Demod\_Part1**

*Type: other For: discussion  
 Source: Moderator (LGE)*

(Replaces R4-2017415)

**Discussion:**

The contribution summarized email discussion thread [97e][317] V2X\_Demod\_Part1. The email thread was moderated Jin-yup Hwang (LG Electronics Inc.) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017469 WF on single link tests for NR V2X demodulation performance**

*Type: other For: discussion  
 Source: LGE*

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **revised to R4-2017687**.

**R4-2017687 WF on single link tests for NR V2X demodulation performance**

*Type: other For: discussion  
 Source: LGE*

(Replaces R4-2017469)

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **approved**.

**R4-2017470 Simulation assumptions for NR V2X single link test case**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **approved**.

**R4-2017416 Email discussion summary for [97e][318] V2X\_Demod\_Part2**

*Type: other For: discussion  
 Source: Moderator (Intel)*

**Discussion:**

The contribution summarized email discussion thread [97e][318] V2X\_Demod\_Part2. The email thread was moderated by Dmitry Belov (Intel Corporation SAS) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017613**.

**R4-2017613 Email discussion summary for [97e][318] V2X\_Demod\_Part2**

*Type: other For: discussion  
 Source: Moderator (Intel)*

(Replaces R4-2017416)

**Discussion:**

The contribution summarized email discussion thread [97e][318] V2X\_Demod\_Part2. The email thread was moderated by Dmitry Belov (Intel Corporation SAS) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017471 WF on multiple link tests for NR V2X demodulation performance**

*Type: other For: discussion  
 Source: Intel*

**Discussion:**

See email discussion summary for [97e][318] V2X\_Demod\_Part2 in R4-2017416.

**Decision:** The document was **revised to R4-2017686**.

**R4-2017686 WF on multiple link tests for NR V2X demodulation performance**

*Type: other For: discussion  
 Source: Intel*

(Replaces R4-2017471)

**Discussion:**

See email discussion summary for [97e][318] V2X\_Demod\_Part2 in R4-2017416.

**Decision:** The document was **approved**.

**R4-2017472 Simulation assumptions for NR V2X multiple link test case**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][318] V2X\_Demod\_Part2 in R4-2017416.

**Decision:** The document was **approved**.

**R4-2014419 Simulation results of NR V2X demodulation test**

*Type: discussion For: Discussion  
 Source: CATT*

**Abstract:**

In this contribution, the initial simulation results are provided based on the simulation assuptions agreed in the last meeting.

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **noted**.

**R4-2014537 Discussion on V2X work scope and general simulation assumptions**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Abstract:**

Proposal 1: Define SDR requirements with active Sidelink in the scope of Rel-16 V2X.

Proposal 2: Define Rel-16 V2X demodulation requirements for different relative vehicle speeds: 30, 260 and 500 km/h.

Proposal 3: Define Rel-16 V2X demodulation requirements for scenarios with gNB based synchronisation, relative vehicle speed 30 km/h, TX/RX frequency offset ±1300 Hz and TX/RX time offset ±24Ts.

Proposal 4: Postpone the discussion on definition of 256QAM until simulation assumption for verification of basic V2X functionality will be stable.

Proposal 5: Use the following resource pool configuration for V2X demodulation requirements with CBW 20 MHz and SCS 30 kHz: sub-channel size = 10 PRBs, number of sub-channels = 5.

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **noted**.

**R4-2014779 Discussion on V2X Demod test case**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Abstract:**

Proposal 1: 40MHz CBW should be configured for PSCCH/PSSCH decoding capability test.

Proposal 2: The velocity configuration of NR V2X test case can reuse LTE V2X.

Proposal 3: PSFCH should be transmitted on every slot and 3DMRS symbols for PSSCH test cases.

Proposal 4: 1 S-SSB per SL period should be configured for 30kHz SCS.

Proposal 5: Not to define 256QAM demodulation test case.

Proposal 6: Not to define SDR with active sidelink test case.

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **noted**.

##### 7.3.7.2 Single link test [5G\_V2X\_NRSL-Perf]

**R4-2014417 Discussion on single link demodulation test for NR V2X**

*Type: discussion For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **noted**.

**R4-2014420 CR for 38.101-1: Introduce PSBCH performance requirements for NR V2X**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0087 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

Introduce PSBCH performance requirements for NR V2X

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **postponed**.

**R4-2014538 Discussion on Single Link V2X requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **noted**.

**R4-2014637 NR V2X Demod single link requirement**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Abstract:**

Proposal 1: Introduce two tests for PSSCH with 64QAM MCS table with low speed 30km/h and high speed 500km/h. For high speed tests, consider the following configurations (a) TDL\_C 300ns channel (b) More subchannel allocation (c) Not configuring PSFCH. (a)+(b) is preferred in our opinion.

Proposal 2: Configure 2 DMRS symbol for PSSCH low speed test.

Proposal 3: PSSCH tests MCS configuration: MCS 21 for low speed, and MCS 4 for high speed

Proposal 4: Define the requirement based on subchannel size of 10RB for all PSSCH tests except high speed.

Proposal 5: Define 256QAM PSSCH demod test with the same configuration as low speed PSSCH demod test configuration, only change the MCS to lowest one in 256QAM (MCS 20).

Proposal 6: Set beta = 2.25 for all PSSCH tests.

Proposal 7: Use relative speed of 260km/h and SCI 1 payload size = 28bits in PSCCH test.

Proposal 8: Use 30km/h relative speed and no repetition for PSBCH test.

Proposal 9: Consider 1 PSFCH in PSFCH detection performance test. Statistics to be collected:

Option 2 (ACK/NACK type): Pr(NACK to ACK) < 0.1%.

Option 1 (NACK only type): Pr(NACK miss) < 1%, or Pr(DTX to NACK)<1% (if we have DTX).

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **noted**.

**R4-2014652 Discussion on NR V2X single link test cases**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Abstract:**

Proposal 1: DMRS configuration for PSSCH demodulation should be considered depending on relative velocity as case 1 and case 3 in option 1.

Proposal 2: PSFCH transmission should be considered every 4 slots.

Proposal 3: QPSK and 64QAM modulation order should be considered for PSSCH demodulation requirements

Proposal 4: 256QAM modulation order should be verified with applicability rule.

Proposal 5: TDLA30-1350 should be used for PSCCH demodulation requirement.

Proposal 6: Only ACK/NACK feedback mode should be considered for PSFCH demodulation (single link) requirement.

Proposal 7: Use simulation assumptions Table 1~4 for single link tests

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **noted**.

**R4-2014668 Initial simulation results for NR V2X single link test cases**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Abstract:**

In this contribution, we provide initial simulation results for single link test cases for alignment.

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **noted**.

**R4-2014780 CR on NR V2X PSFCH demodulation requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

**Abstract:**

The V2X PSFCH demodulation requirements are missing

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **postponed**.

**R4-2015640 Discussion on performance requirements for NR V2X single-link test**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **noted**.

**R4-2015641 Simulation results for NR V2X single-link test**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][317] V2X\_Demod\_Part1 in R4-2017415.

**Decision:** The document was **noted**.

##### 7.3.7.3 Multiple link test [5G\_V2X\_NRSL-Perf]

**R4-2014418 Discussion on multiple link demodulation test for NR V2X**

*Type: discussion For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][318] V2X\_Demod\_Part2 in R4-2017416.

**Decision:** The document was **noted**.

**R4-2014539 Discussion on Multiple Link V2X requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][318] V2X\_Demod\_Part2 in R4-2017416.

**Decision:** The document was **noted**.

**R4-2014636 NR V2X Demod multiple linkrequirement**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][318] V2X\_Demod\_Part2 in R4-2017416.

**Decision:** The document was **noted**.

**R4-2014638 CR: Demod HARQ buffer soft combining test cases for NR V2X**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Qualcomm, Inc.*

**Abstract:**

Add the demod HARQ buffer soft combining test cases for Rel-16 NR V2X.

**Discussion:**

See email discussion summary for [97e][318] V2X\_Demod\_Part2 in R4-2017416.

**Decision:** The document was **postponed**.

**R4-2014669 Discussion on NR V2X multiple link test cases**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Discussion:**

See email discussion summary for [97e][318] V2X\_Demod\_Part2 in R4-2017416.

**Decision:** The document was **noted**.

**R4-2014670 Initial simulation results for NR V2X multiple link test cases**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Discussion:**

See email discussion summary for [97e][318] V2X\_Demod\_Part2 in R4-2017416.

**Decision:** The document was **noted**.

**R4-2015642 Discussion on performance requirements for NR V2X multi-link test**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][318] V2X\_Demod\_Part2 in R4-2017416.

**Decision:** The document was **noted**.

**R4-2015643 Draft CR: Introduce power imbalance with two links test for NR sidelink**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Huawei, HiSilicon*

**Abstract:**

According to the work plan of V2X demodulation, companies should submit draft CRs in RAN 4 97-e meeting and RAN 4 has agree to introduce power imbalance with two links test

**Discussion:**

See email discussion summary for [97e][318] V2X\_Demod\_Part2 in R4-2017416.

**Decision:** The document was **postponed**.

**R4-2015644 Draft CR: Introduce PSCCH/PSSCH decoding capability test for NR sidelink**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Huawei, HiSilicon*

**Abstract:**

According to the work plan of V2X demodulation, companies should submit draft CRs in RAN 4 97-e meeting and RAN 4 has agree to introduce PSCCH/PSSCH decoding capability test

**Discussion:**

See email discussion summary for [97e][318] V2X\_Demod\_Part2 in R4-2017416.

**Decision:** The document was **postponed**.

**R4-2015645 Draft CR: PSFCH decoding capability test for NR sidelink**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Huawei, HiSilicon*

**Abstract:**

According to the work plan of V2X demodulation, companies should submit draft CRs in RAN 4 97-e meeting.

**Discussion:**

See email discussion summary for [97e][318] V2X\_Demod\_Part2 in R4-2017416.

**Decision:** The document was **postponed**.

### 7.4 Integrated Access and Backhaul for NR [NR\_IAB]

#### 7.4.1 General [NR\_IAB-Core]

|  |
| --- |
| **GTW Session on Nov.2nd 4:00-7:00 am UTC time**  - IAB conformance work plan (0.5H)  - [309]/[310] IAB RF conformance (1.5 H)  - [319] IAB Demod  (1H)  **Conformance specification drafting plan (15 minutes)**  **Issue 1-2-1: Number of specifications and how the split is done (from email thread [309])**  In this issue it will be discussed how many conformance specifications will be needed and how topics are arranged between the specifications. Two clear options have been provided but other opinions are also welcomed.   * Proposals   + Option 1: Single specification covering conducted and radiated testing for RF, demod and RRM.   + Option 2: Two specifications, one capturing conducted and the other radiated testing. Each specification captures RF, demod and RRM. * Recommended WF   + Option 2   RAN4 agree to introduce dedicated IAB conformance specification(s) which supposed to cover both RF, demod and [RRM] conformance testing   * RRM part need to be further confirmed by RRM experts in this meeting * Two specification parts, one for conducted testing and one for radiated testing i.e. -1/-2   In Dec RAN-P, IAB WID will be updated to include nee IAB conformance testing specification.  RAN4 will continue to discuss the spec skeleton in email thread [309] for issue 1-2-2, demod and RRM experts are encouraged to follow this discussion for general sections i.e. section 4 , Annex in R4-2016084; for sub-sections under RRM and Demod sections can be discussed separately in dedicated RRM and Demod email thread.  **Common test issues from email thread [309] (1H15 minutes)**  **Issue 2-1-1: IAB-MT test setup**  Some individual proposals are also made to confirm the test setup as a starting point. These proposals are gathered below for commenting.   * Proposals   + BS principles of constructing and configuring the test case using test models and configurations is adopted.   + In the same test setup, DUT can be either IAB-DU or IAB-MT i.e. different setups are not needed   + TS descriptions of environments shall not mandate specific equipment and therefore allow flexibility in connection setup * Recommended WF   + Agree above proposals   QC: IAB-MT needs to have function of bidirectional link with TE. The test set-up for IAB-MT would be hybrid of UE test and BS test method.  CATT: If the principle refers to test point is OK. If referring to details, i.e. REFSNES, we have different approach among BS and UE test set-up.  ZTE: IAB-MT has full function including sync on PSS/SSS, cell access which not applicable for BS test set-up.  E///: Similar as BS, no need to include DL signals in IAB-MT Tx requirements test set-up. This is left open to implementation which means both BS approach and UE approach allowed. Following BS approach of test modes will save test time/effort.  Nokia: In BS demodulation, there is linkage between TE and BS, not always means Uu interface. We can use similar approach as BS to have generic test set-up, for other details leave to implementation which means not preclude BS approach or UE approach either.  Huawei: We agree with E/// and Nokia. Test interface can be left open and test set-up as generic as possible to focus the necessary information matched with core requirements. There are some exceptions i.e. frequency error, maximum power, which we may need to study how to introduce the test cases.  Keysight: share similar view as QC, if following BS approach, what’s the functionality for sync? Test linkage functionality need to be clarified further since the device is not gNB.  Samsung: We agree with other infra-vendors, even IAB-MT act like UE, on the other side, IAB-MT will be designed based on customer request which similar as BS i.e. IAB-MT no need to implement all the CHBW and SCS. We are open to further discuss the additional necessity information needed for IAB-MT besides the test set-up used for BS.  QC: IAB-MT needs to sync with IAB-donor node, this functionality need to be guarantee during test.  Nokia: The test linkage used in BS approach already be approved work well.  E///: Similar as UE, BS also has sync procedure with interaction with UE in real deployment. On the other side, for BS conformance approach, we don’t mandate to simulate/establish such linkage in test set-up.  Samsung: The scope of test set-up, we are discussing the linkage between DUT (IAB-MT) and TE?  ZTE: IAB-MT has several function based on RRC parameters and SSB configuration; BS just have configuration tables no such detailed information.  Huawei: We are discussing the RF requirements not the features IAB-MT supported. Leaving it flexible would be helpful.  Nokia: In one test configuration, we should have test modes meanwhile TE vendors have choice to choose which test modes or both can be implemented.  Initial condition in sync can be adopted for all the demod test cases.  The linkage is part of test set-up, FRC/RMC, test modes also part of the test set-up.  If some additional information needed for specific test cases, this can be included for those specific test cases.  E///: UE is black box test and BS is white box testing. IAB-MT is network node, no need to mandate the black or white box approach. Regarding sync, as long as we can ensure the sync among IAB-MT and TE, no need to mandate the details for that TE procedure.  Keysight: The functionality need to be address firstly before detailed test set-up. What we need the basis for test set-up need to be clarified.  QC: Sync always needs to operate and maintain all the time during the test. We are not talking about white box/black box issue.  E///: We already have test procedure in BS conformance testing. We change test approach means we may need to change TEs .  Using BS test structure to generate the test set-up including test configurations, test models, RF channels  - Test linkage between TE and DUT (IAB-MT) need to be further discussed including what’s the basis information needed, and which part can be left open to implementation.  - TS descriptions of environments shall not mandate specific equipment and therefore allow flexibility in connection setup  **Issue 2-1-2: IAB-MT test models**  For test models two main views are present. Either BS test models are taken as baseline and the content is modified to reflect UL operation, or UE test models are taken into use either directly or with modifications.   * Proposals   + Option 1: BS test models are the baseline for IAB-MT test models, content is modified for UL operation. Combining some TMs can be further discussed.   + Option 2: UE test models are the reference for IAB-MT test models. These models will be further simplified to be used for IAB-MT. * Recommended WF   + Discuss above options. Discuss in second round details including proposals for TDD configuration and DM-RS configuration.   IAB-MT tests models will be introduced for UL operation, regarding the detailed parameters need to be included in Test models will be further discussed.   * We will further compare the UE test models (uplink RMC) and BS Test models to narrow down and simplify the necessary information   **Issue 2-1-3: IAB-MT test configurations**  Majority of the companies express a view that BS test configurations can be re-used for IAB-MT while some details like power allocation may need some modification. One company also raised the option that some test configuration related parameters are adopted from UE test specifications.   * Proposals   + Option 1: BS test configurations are the baseline to be used for IAB-MT.   + Option 2: Test frequency, test channel bandwidth and test parameters of IAB-MT should follow the UE configuration * Recommended WF   + option 1   BS test configurations are the baseline to be used for IAB-MT. For the details need to be further checked including CHBW and other parameters.  **Issue 2-1-4: IAB-MT test environments**  Majority of the companies express that the same test facilities are used for gNB and IAB-Node testing. However, concerns are also raised if there is a need to try to adopt also some UE aspects, which differ from gNB, into the environment discussion.   * Proposals   + Option 1: IAB-MT uses the same test environments, i.e. chamber types, MU/TT, environmental conditions, as IAB-DU.   + Option 2: Additional work is needed to see if/how UE test environment aspects can to be accommodated to coexist with option 1. Aspects to be considered include at least MU/TT, temperature, humidity, and vibration and power source conditions. * Recommended WF   + Option 1   Keysight: This is related previous discussion for test set-up, it’s premature to conclude now.  Huawei: For chamber part should be same, for other parts need to be confirmed.  Samsung: Fine with option 1 pending the agreement on test set-up conclusion. And we have some delta requirements i.e. foe.  ZTE: For chamber part should be same, for other parts we would like to check.  Companies are encouraged to provide detailed comments in the email thread for the factors which need to be evaluated.  **Issue 2-1-5: IAB-MT receiver testing**   * Proposals:   + Receiver DL baseband configuration for RF: align with performance testing FRC definition   + There is no need to specify the message content in receiver test case. * Recommended WF   + TBA   E///: Align the format with IAB-MT FRC parameters. Message contents mean special test signalling refers to RAN5 spec.   * DL FRC configured for IAB-MT receiver testing and IAB-MT performance testing FRC definition need to be aligned.   **Issue 1-3-1: Connection to IAB RF for IAB Demod test from email thread [319]**   * Proposals   + Option 1 (Ericsson): Co-ordinate the decisions on IAB demod and IAB RF testing to the extent necessary to ensure that the approach to testing is consistent   + Option 2: Other options are not precluded. * Recommended WF   + Collect views in 1st round.   Agreement: Co-ordinate the decisions on IAB demod and IAB RF testing to the extent necessary to ensure that the approach to testing is consistent  **IAB Demod specific test issues from email thread [319] (1H)**  **Sub topic 3-1 IAB\_MT Demod conformance testing set-up**  **Issue 3-1-2: DUT placement reference point and orientation**   * Proposals   + Option 1 (Nokia): Coordinate reference point and orientation of the IAB-MT under test is for manufacture declaration.   + Option 2: Other options are not precluded. * Recommended WF   + Collect views in 1st round.   E///: Fine with option 1, reference points for RF and Demod could be same.  Agreement: Coordinate reference point and orientation of the IAB-MT under test is for manufacture declaration.  **Issue 3-1-3: DUT feedback**   * Proposals   + Option 1 (Nokia): HARQ/RV feedback done via an error-free digital feedback (RF or cable link).   + Option 2: Other options are not precluded. * Recommended WF   + Collect views in 1st round.   Agreement: HARQ/RV feedback done via an error-free digital feedback, the feedback linkage to TE still FFS  **Issue 3-1-4: KPI deriving entity**   * Proposals   + Option 1 (Nokia): Performance indicators are derived by the DUT, i.e., by the IAB-MT   + Option 2: Other options are not precluded. * Recommended WF   + Collect views in 1st round.   No need to be specified in the specification for KPI deriving entity.  **Sub-topic 2-1: IAB-DU > General requirement scope**  **Issue 2-1-1: IAB DU backhaul and access link differences**   * Background   + Agreement from [R4-2012644]     - Backhaul and access links Limit the scope of IAB demod to UL (access and backhaul) and DL (backhaul) links. * Proposals   + Option 1 (Ericsson): Discuss whether there is any difference in RX scenario between backhaul and access for the IAB-DU   + Option 2: Other options not precluded. * Recommended WF   + Companies are invited to discuss and present options, along with stating the impact of the proposals on the BS demod requirement re-use.   Huawei: NO need to have discrimination for performance requirements for backhaul and access scenarios.  E///: We should have one set requirements, no need to discriminate the scenarios in the specification. We should ensure the scenarios should be covered in the requirements.   * RAN4 will introduce IAB-DU demodulation requirements covering UL access and backhaul links. * No need to discriminate the test cases for these two links in the specification.   **Issue 2-1-2: Additional requirement configurations on top of BS ones**   * Proposals   + Option 1 (Ericsson): The IAB DU backhaul link requirements are a sub-set of the IAB-DU access link requirements.   + Option 2 (Nokia, Huawei): There is no need to introduce any new performance requirements for IAB-DU in addition to already existing BS requirements.   + Option 3: Other options not precluded. * Recommended WF   + No contributor wants to introduce requirements that go beyond previous BS requirements; one contributor explicitly proposes to not have additional requirements, while another one seems to also propose this indirectly. Is it agreeable to say “The IAB DU backhaul link requirements are a sub-set of the IAB-DU access link requirements; no new requirements beyond BS requirements shall be introduced.”? * There is no need to introduce any new performance requirements for IAB-DU in addition to already existing BS requirements.   Huawei: Some specific test cases only defined under high speed scenarios, we would like to check whether channel model need to be replaced.  E///: We assume such high speed scenarios mentioned for Rel-15 not Rel-16, backhaul link maybe not applicable but for access link still meaningful. We need to check the details.  **Issue 2-1-3: Basis for requirement re-use**   * Proposals   + Option 1 (Huawei, Nokia): Based on Rel-15 gNB performance requirements to discuss IAB-DU performance requirements definition.   + Option 2 (Nokia, ~~Huawei~~): Base IAB-DU performance requirements on the 3GPP Release 15 features (e.g., excluding HST, URLLC, etc.) and consider additional features only by request.   + Option 3 (Ericsson): Discuss which Rel-16/15 requirements to exclude.   + Option 4: Other options not precluded. * Recommended WF   + Collect views in 1st round.   E///: Access link can be supported some of Rel-16 features. Meanwhile we also realize no actual needs in current moment.   * Based on Rel-15 gNB performance requirements to discuss IAB-DU performance requirements definition.   **Issue 2-3-1: General SCS/CBW combinations**   * Proposals   + Option 1 (Huawei): Define performance requirements to be agnostic w.r.t. bandwidth and SCS.   + Option 2: Other options are not precluded. * Recommended WF   + Collect views in 1st round.   E///: We should try to reuse existing BS requirements without simulation effort since we already have them in BS spec, no need this applicable approach.  Nokia: We have existing requirements and applicable rules in BS requirements; we share similar view as E///. What’s the reference for this band agonistic approach?  Samsung: In the beginning of this WI, RAN4 agree that IAB-MT have no impact on existing BS requirements. We prefer the similar reference approach as we did for RF core for performance requirements.  Huawei: If companies have concern on this proposal, it’s fine for us. We can’t decide totally reuse at this moment, we can discuss case by case manner.  In principle, reuse the existing BS requirements as generic approach meanwhile the exceptions for the specific test cases not excluded pending on further discussion.  Using existing applicable rules for CHBW, SCS and number of RX antenna configuration as starting point, further refinement not precluded. |

**R4-2017405 Email discussion summary for [97e][307] NR\_IAB\_General**

*Type: other For: discussion  
 Source: Moderator (CATT)*

**Discussion:**

The contribution summarized email discussion thread [97e][307] NR\_IAB\_General. The email thread was moderated by Huiping Shan (Fiberhome Technologies Group) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017614**.

**R4-2017614 Email discussion summary for [97e][307] NR\_IAB\_General**

*Type: other For: discussion  
 Source: Moderator (CATT)*

(Replaces R4-2017405)

**Discussion:**

The contribution summarized email discussion thread [97e][307] NR\_IAB\_General. The email thread was moderated by Huiping Shan (Fiberhome Technologies Group) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017642 Draft CR to TS 38.174: maintenance of TS 38.174 clause 4**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **endorsed**.

**R4-2017643 Draft CR to TS 38.174: add new sub-clauses to TS 38.174 clause 4**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: ZTE*

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **endorsed**.

**R4-2017644 Draft CR to TS 38.174: maintenance of TS 38.174 clause 5**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **endorsed**.

**R4-2017474 Draft CR to TS 38.174: maintenance of TS 38.174 References and Definitions**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **endorsed**.

**R4-2017475 Draft CR to TS 38.174: maintenance of TS 38.174 Symbols and Abbreviations**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **endorsed**.

**R4-2016139 Draft CR to TS 38.174: IAB General and RF core maintenance**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: ZTE Corporation*

**Abstract:**

IAB core requirement is not defined correctly and needs further revision. Lot of editorial corrections are also needed

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **not pursued**.

##### 7.4.1.1 System parameters maintenance [NR\_IAB-Core]

**R4-2014384 Draft CR to TS 38.174: IAB-MT CA support and maintanance of clause 4 to 5**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: CATT*

**Abstract:**

The CA support for IAB-MT is not complete in the spec and some maintanance is neccesary for clause 4 and clause 5.

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **not pursued**.

**R4-2014752 Correction CR on TR38.809**

*Type: CR For: Agreement  
 38.809 v16.0.0 CR-0001 Cat: F (Rel-16)  
  
 Source: Samsung*

**Abstract:**

There are sub-clauses voided in version submitted to RAN#89e which can be cleanup in Nov meeting according to guidance shared in RAN4 reflector.

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **revised to R4-2017473**.

**R4-2017473 Correction CR on TR38.809**

*Type: CR For: Agreement  
 38.809 v16.0.0 CR-0001 rev 1 Cat: F (Rel-16)  
  
 Source: Samsung*

(Replaces R4-2014752)

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **agreed**.

**R4-2017664 Correction CR on TS38.174**

*Type: CR For: Agreement  
 38.174 v16.0.0 CR-0006 Cat: - (Rel-16)  
  
 Source: Qualcomm*

**Decision:** The document was **agreed**.

**R4-2015433 DraftCR to TS 38.174: System parameter corrections**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

IAB-MT channel bandwidth for CA is missing from the specification. It is required for emission measurements. Frequency range for operating band n41 is erroneous.

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **not pursued**.

**R4-2016081 draftCR to TS 38.147: IAB-MT number of TRX**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Huawei*

**Abstract:**

The minimum number of TRX for the IAB-MT in the refernece poimnt definition clause is still FFS

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **not pursued**.

**R4-2016251 CR on System parameters maintenance**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

**Abstract:**

IAB-MT CA feature system parameter missing,

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **not pursued**.

**R4-2016260 CR on System parameters**

*Type: draftCR For: Endorsement  
 38.809 v16.0.0  
 Source: Ericsson*

**Abstract:**

“BR” not known,

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **endorsed**.

##### 7.4.1.2 Others [NR\_IAB-Core]

**R4-2014385 Draft CR to TS 38.174: maintanance of references and definitions**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: CATT*

**Abstract:**

The references and the defintions are not complete.

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **not pursued**.

**R4-2014751 Draft CR with correction on section 4**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Samsung*

**Abstract:**

There are mistakes for which correction needed in applicability of requiremnt table for IAB-MT

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **not pursued**.

**R4-2015434 DraftCR to TS 38.174: General section corrections**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Most symbol and abbreviation definitions are missing even though they are used in the specification. Minimum number of IAB-MT transceivers is agreed and no longer FFS. Regional requirement section is empty, while regional requirements like category B requirements are included in the specification. Section for requirements for contiguous and non-contiguous spectrum includes content only IAB-DU while the same principles apply also for IAB-MT. Specification contains editorial errors.

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **not pursued**.

**R4-2016083 draftCR to TS 38.174: Definitions, symbols and abreviations**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Huawei*

**Abstract:**

The definitions symbols and abbreviations sections of the TS were not completed in the 1st revision

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **not pursued**.

**R4-2016250 CR on general requirements in TS 38.174**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

**Abstract:**

Missing the regional requirement in 4.5. Align the with other RAN4 agreement in 4.3.3. Add contigous and non-contigous spectrum on wide area IAB-MT. Add the OTA co-location clause title.

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **not pursued**.

**R4-2016259 CR on general requirements in TR 38.809**

*Type: draftCR For: Endorsement  
 38.809 v16.0.0  
 Source: Ericsson*

**Abstract:**

Editorial change

**Discussion:**

See email discussion summary for [97e][307] NR\_IAB\_General in R4-2017405.

**Decision:** The document was **endorsed**.

#### 7.4.2 RF requirements maintenance [NR\_IAB-Core]

**R4-2017406 Email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

**Discussion:**

The contribution summarized email discussion thread [97e][308] NR\_IAB\_RF\_Maintenance. The email thread was moderated by Valentin Gheorghiu (Qualcomm Incorporated) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017615**.

**R4-2017615 Email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

(Replaces R4-2017406)

**Discussion:**

The contribution summarized email discussion thread [97e][308] NR\_IAB\_RF\_Maintenance. The email thread was moderated by Valentin Gheorghiu (Qualcomm Incorporated) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

|  |
| --- |
| **GTW Session on 11.4th**  **Issues from email thread [310] IAB conformance testing part2:**  **Issue 1-1: reference condition on dynamic range for IAB-MT**   * Proposals   + Option 1: [R4-2014391] Test point on [2][3][4]     - [2] Low PSD with full RB allocation     - [3] High PSD with partial RB allocation     - [4] High PSD with full RB allocation   + Option 2: [R4-2015441] Test point on [1] and [4] with test requirement as PSD difference + 10\*log10(NRBratio)     - [1] Low PSD with narrow RB allocation     - [4] High PSD with full RB allocation   + Not preclude other option * Recommended WF   + To be discussed   E///: We need to clarify whether applicable for both WA and local IAB-MT or only local IAB-MT.  For test point 4, if it’s aligned with maximum power then probably no need to test on test point 4.  In general, we think further study needed.  QC: we support option to include test point [3], IAB-MT should have capability to boost power similar as UE.  Nokia: High PSD means for same PSD in [3] and [4], maximum power dynamic change with 5dB/10dB pending on IAB-MT class. We need to align the core requirements definition which reached in previous.  We should have test requirements cover both IAB-MT classes, and the test procedure can be further discussed and simplified if feasible.  We prefer option 2, as these test points can meet both the corners of X and Y core requirements.  CATT: our proposal is similar as option 1. For test point 4 may be already verified by maximum power requirements.  Huawei: The core requirements means under fixed condition. Option 2 didn’t directly match with core as test X. Y in the same time which has benefits on test cases. Meanwhile we should ensure test cases matched with core, irrespective of number of test cases.  We have requirements for WA IAB\_MT, and then we need have dedicated test cases.  Samsung: we have similar view as Huawei and Nokia, this requirement applicable for both WA and Local IAB-MT classes.  Even IAB-MT need to similar UE functionality, meanwhile not sure IAB-MT need to support entirely functionality.  One possible way: we can introduce some specific test point based on declaration basis.   * RAN4 will introduce conformance test cases for dynamic range requirements for both wide-area and local-area IAB-MT classes.   + RAN4 will further discuss the uncertainty impact on the feasibility of introducing test cases   The candidate test points for dynamic range test cases collected for further consideration till now to aligned with the agreements reached in R4-2008775:   * [1] Low PSD with narrow RB allocation * [2] Low PSD with full RB allocation * [3] High PSD with partial RB allocation * [4] High PSD with full RB allocation with maximum output power * Other proposals not excluded   **Issue 1-2: Test independency of power control and dynamic range**   * Proposals: [R4-2015441] Dynamic range and power control tests to be defined separately. * Recommended WF   + Check and confirm above proposal   Agreement:  Dynamic range and power control tests to be defined separately.   * Further discuss test applicable rules among these test cases not excluded   **Issues from email thread [308] IAB RF maintenance:**  IAB-MT Tx EVM measurement procedure  **Issue 1-1: EVM Measurement procedure**   * Proposals   + Option 1: Re-use Rel.15 UE EVM testing procedures without spectrum flatness, in-band emission, LO leakage and IQ-imbalance requirements and remove DFT-s-OFM signals for IAB-MT(R4-2014388, R4-2016137)   + Option 2: Re-use BS test procedure and use single requirement for all channels, remove DTS-s-OFDM (R4-2015207) * Recommended WF   + Adopt Option 1. The IAB-MT is transmitting signals just like a UE and the BS receiver is the same for IAB-MTs and UEs so same requirements and test procedure should be followed   Nokia: The aims for test procedure captured in Core specification Annex; or we are talking about conformance test procedure.  We already agree no spectrum flatness, in-band emission leakage and IQ imbalance core requirements for IAB-MT.  For Core annex EVM measurement procedure, we think option 2 BS approach should be OK.  E///: This is also connected to generic conformance test set-up discussion.  CATT: Option 1 is from CATT and ZTE. Question 1: what signal should be transmitted? DL/UL, we believe IAB-MT TX should be UL signal. The detailed processing on TE side for EVM measurement procedure pending on TX signal transmitted.  ZTE: Our major proposal is to replace DL signal as UL signal for IAB-MT Tx.  QC: Signaling processing aspect from EVM measurement procedure; and conformance test set-up procedure.  For signaling processing aspect captured in Annex of core, we need to use UE approach. For conformance test set-up, we should discuss under conformance agenda.  Nokia: For IAB-MT, the transmitted signal should be UL. The remaining issue would be PTRS, PTRS usage should be aligned with infra design.  E///: We think no need to differentiate different physical channels, generic requirements can be enough. Using BS approach still possible.  ZTE: Test modes still specified for different physical channels (PDCCH and PDSCH).  Agreement:  The signaling processing procedure on IAB-MT EVM requirements which similar as captured in Annex of BS and UE RF specification will be discussed in RF maintenance agenda.   * Alt1: Reusing UE approach with modification to remove spectrum flatness, in-band emission, LO leakage and IQ-imbalance parts * Alt2: Reusing BS approach and replacing DL channels as UL channels for IAB-MT * FFS whether PTRS need be configured or not * FFS whether RAN4 will introduce test cases for UL DFT-S-OFDM signals, if introduced clarification for optional supporting needed   For other test set-up issues will be discussed in conformance agenda. |

##### 7.4.2.1 Transmitter characteristics [NR\_IAB-Core]

**R4-2016137 Further discussion on IAB-MT power control and EVM measurement**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **noted**.

###### 7.4.2.1.1 Tx Power related requirements [NR\_IAB-Core]

**R4-2016257 CR on Tx Power related requirements**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

**Abstract:**

Remove the FDD band requirement as IAB does not have FDD band in Rel-16. Correct the power control requirement reference table

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **revised to R4-2017482**.

**R4-2017482 CR on Tx Power related requirements**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

(Replaces R4-2016257)

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

**R4-2016264 CR on Tx Power related requirements chapter**

*Type: draftCR For: Endorsement  
 38.809 v16.0.0  
 Source: Ericsson*

**Abstract:**

Adding the local area IAB-MT on the RAN4 agreement

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

###### 7.4.2.1.2 Transmitted signal quality [NR\_IAB-Core]

**R4-2014386 Draft CR to TS 38.174: Transmitted signal quality maintainance**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: CATT*

**Abstract:**

The spec structure of transmitted signal quality is not aligned with other requirements.

The EVM frame structure for measurement is missing.

The EVM measurement process for IAB-MT is [TBD] not void.

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **revised to R4-2017476**.

**R4-2017476 Draft CR to TS 38.174: Transmitted signal quality maintainance**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: CATT*

(Replaces R4-2014386)

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

**R4-2014387 Draft CR to TS 38.809: Transmitted signal quality maintainance**

*Type: draftCR For: Endorsement  
 38.809 v16.0.0  
 Source: CATT*

**Abstract:**

There’s no background of EVM measurement frame structure in the TP.

The titles of sub-caluse 7.5.2 and 9.6.2 are missing.

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **revised to R4-2017477**.

**R4-2017477 Draft CR to TS 38.809: Transmitted signal quality maintainance**

*Type: draftCR For: Endorsement  
 38.809 v16.0.0  
 Source: CATT*

(Replaces R4-2014387)

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

**R4-2015207 IAB EVM procedure and other consideration**

*Type: discussion For: Approval  
 38.174 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **noted**.

**R4-2015435 DraftCR to TS 38.174: Transmitted signal quality**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

IAB-MT modulation quality requirement is included in section belonging to frequency error.

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **not pursued**.

**R4-2016082 draft CR to TS 38.174 - Correction of IAB-modulation quality sub-clause.**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Huawei*

**Abstract:**

The IAB modulation quality sub clause text is in the woring place.

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **not pursued**.

**R4-2016255 CR on Tx signal quality requirements**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

**Abstract:**

Terminology replacement and specification structure re-arrangement

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **not pursued**.

**R4-2016263 CR on Tx signal quality related requirements chapter**

*Type: draftCR For: Endorsement  
 38.809 v16.0.0  
 Source: Ericsson*

**Abstract:**

Weaken the frequency error requriement reasoning, there are different synchronization implementation depending on different architecture design.

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **revised to R4-2017478**.

**R4-2017478 CR on Tx signal quality related requirements chapter**

*Type: draftCR For: Endorsement  
 38.809 v16.0.0  
 Source: Ericsson*

(Replaces R4-2016263)

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

###### 7.4.2.1.3 Unwanted emissions [NR\_IAB-Core]

**R4-2016258 CR on unwanted emission requirements**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

**Abstract:**

5MHz IAB-MT/IAB-DU channel bandwidth is not supported in IAB Rel-16 frequency band.

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **not pursued**.

**R4-2017483 CR on unwanted emission requirements**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: ZTE*

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

**R4-2016265 CR on unwanted emission requirements chapter**

*Type: draftCR For: Endorsement  
 38.809 v16.0.0  
 Source: Ericsson*

**Abstract:**

Adding the text for the IAB-MT downlink transmission requriement

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

###### 7.4.2.1.4 Others [NR\_IAB-Core]

**R4-2014388 Discussion on IAB-MT EVM measurement process**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **noted**.

**R4-2016256 CR on Tx characteristic other requirements**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

**Abstract:**

Annex F for interference charateristic is missing

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **revised to R4-2017486**.

**R4-2017486 CR on Tx characteristic other requirements**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

(Replaces R4-2016256)

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

##### 7.4.2.2 Receiver characteristics [NR\_IAB-Core]

###### 7.4.2.2.1 Sensitivity and dynamic range requirements [NR\_IAB-Core]

**R4-2017651 draftCR to TS 38.174: Section 10.2 OTA sensitivity**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

**R4-2015436 DraftCR to TS 38.174: Sensitivity corrections**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Section 7.1 with general sensitivity information is empty. FR2 OTA reference sensitivity requirement table for IAB-MT is empty. Editorial errors exist.

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **revised to R4-2017479**.

**R4-2017479 DraftCR to TS 38.174: Sensitivity corrections**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015436)

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

**R4-2016254 CR on Sensitivity and dynamic range related requirements**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

**Abstract:**

The new TS specication for conformance test not decided and number of the declared direction can be discussed in conformance phase with adding bracket for now.

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **not pursued**.

**R4-2016262 CR on Sensitivity and dynamic range related requirements chapter**

*Type: draftCR For: Endorsement  
 38.809 v16.0.0  
 Source: Ericsson*

**Abstract:**

Weaken the statement in 8.2.2 for SNR requriement. The SNR is taken after simulation and agreement in RAN4. Typo correction on 10.2

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

###### 7.4.2.2.2 In-band selectivity and blocking requirements [NR\_IAB-Core]

**R4-2015437 DraftCR to TS 38.174: In-band selectivity corrections**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Some ACS interferer offsets are not defined. There are errors whether delta OTAREFSENS or delta OTAminSENS is used to offset the interfering signal mean power in IAB-MT in-band blocking test. Editorial errors exist.

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **revised to R4-2017480**.

**R4-2017480 DraftCR to TS 38.174: In-band selectivity corrections**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015437)

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

**R4-2016252 CR on Inband selectivity and blocking requirements**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

**Abstract:**

inband selectivity and blocking requirements correction in TS38.174

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **revised to R4-2017481**.

**R4-2017481 CR on Inband selectivity and blocking requirements**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

(Replaces R4-2016252)

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

**R4-2016261 CR on Inband selectivity and blocking requirements chapter**

*Type: draftCR For: Endorsement  
 38.809 v16.0.0  
 Source: Ericsson*

**Abstract:**

Correct the tabel number and adding the unit

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

###### 7.4.2.2.3 Others [NR\_IAB-Core]

**R4-2015438 DraftCR to TS 38.174: OOB blocking and Rx spurious corrections**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Section number 7.5.2 is applied for multiple different sections. Problem exists also in table numbers. n259 data is missing from table providing step frequencies for defining the radiated Rx spurious emission limits for IAB-MT type 2-O

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **revised to R4-2017484**.

**R4-2017484 DraftCR to TS 38.174: OOB blocking and Rx spurious corrections**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015438)

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

**R4-2016253 CR on Rx Charateristic other related requirements**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

**Abstract:**

Correct the reference number to 38.104

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **revised to R4-2017485**.

**R4-2017485 CR on Rx Charateristic other related requirements**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: Ericsson*

(Replaces R4-2016253)

**Discussion:**

See email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance in R4-2017406.

**Decision:** The document was **endorsed**.

#### 7.4.3 RF conformance testing [NR\_IAB-Perf]

##### 7.4.3.1 General and work plan [NR\_IAB-Perf]

**R4-2017407 Email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [97e][309] NR\_IAB\_Conformance\_Part1. The email thread was moderated by Toni Lahteensuo (Nokia Hungary) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017616**.

**R4-2017616 Email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2017407)

**Discussion:**

The contribution summarized email discussion thread [97e][309] NR\_IAB\_Conformance\_Part1. The email thread was moderated by Toni Lahteensuo (Nokia Hungary) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017487 WF on IAB conformance work plan and specifications**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **approved**.

**R4-2017488 WF and test setup and test environments**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **revised to R4-2017671**.

**R4-2017671 WF and test setup and test environments**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2017488)

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **approved**.

**R4-2017489 WF on manufacturer declarations, test models and configurations including Rx FRC**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **revised to R4-2017672**.

**R4-2017672 WF on manufacturer declarations, test models and configurations including Rx FRC**

*Type: other For: discussion  
 Source: Ericsson*

(Replaces R4-2017489)

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **approved**.

**R4-2017408 Email discussion summary for [97e][310] NR\_IAB\_Conformance\_Part2**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

**Discussion:**

The contribution summarized email discussion thread [97e][310] NR\_IAB\_Conformance\_Part2. The email thread was moderated by Yankun Li (Samsung Electronics GmbH) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017617**.

**R4-2017617 Email discussion summary for [97e][310] NR\_IAB\_Conformance\_Part2**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

(Replaces R4-2017408)

**Discussion:**

The contribution summarized email discussion thread [97e][310] NR\_IAB\_Conformance\_Part2. The email thread was moderated by Yankun Li (Samsung Electronics GmbH) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017490 WF on dynamic range, power control (LA) and frequency error for IAB-MT**

*Type: other For: discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][310] NR\_IAB\_Conformance\_Part2 in R4-2017408.

**Decision:** The document was **approved**.

**R4-2017491 WF on detail aspects on IAB conformance testing**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][310] NR\_IAB\_Conformance\_Part2 in R4-2017408.

**Decision:** The document was **agreed**.

**R4-2014484 IAB RF Conformance Testing**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **noted**.

**R4-2014750 On IAB conformance testing**

*Type: other For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **noted**.

**R4-2015439 IAB RF conformance testing framework**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **noted**.

**R4-2016084 Discussion on conformance specification**

*Type: discussion For: Discussion  
 Source: Huawei*

**Abstract:**

Discuss drafting of the conformance specification

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **noted**.

**R4-2016245 On IAB conformance testing**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this paper, we present our general view on IAB RF conformance test work

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **noted**.

##### 7.4.3.2 Common test issues for conducted and radiated conformance testing [NR\_IAB-Perf]

**R4-2016138 Discussion on IAB conformance testing**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **noted**.

###### 7.4.3.2.1 Test configurations [NR\_IAB-Perf]

**R4-2014389 Discussion on IAB RF test configuration**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **noted**.

**R4-2014485 IAB RF Testing**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **noted**.

**R4-2015440 Test configurations for IAB RF conformance testing**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **noted**.

**R4-2016243 IAB Common test issue on test configuration**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this paper, we present our view on test configuration for IAB RF conformance test work

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **noted**.

###### 7.4.3.2.2 Test models [NR\_IAB-Perf]

**R4-2014390 Discussion on IAB RF test model**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **noted**.

**R4-2016244 IAB Common test issue on test model**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this paper, we present our view on test model for IAB RF conformance test work

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **noted**.

###### 7.4.3.2.3 Others [NR\_IAB-Perf]

**R4-2016242 IAB Common test issue on enviroment conditions**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this paper, we present our view on test enviromental conditions for IAB RF conformance test work

**Discussion:**

See email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 in R4-2017407.

**Decision:** The document was **noted**.

##### 7.4.3.3 Conducted conformance testing [NR\_IAB-Perf]

###### 7.4.3.3.1 Transmitter characteristics [NR\_IAB-Perf]

**R4-2014391 Discussion on the reference conditions of IAB-MT output power dynamics**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][310] NR\_IAB\_Conformance\_Part2 in R4-2017408.

**Decision:** The document was **noted**.

**R4-2015441 Radiated conformance testing, Tx requirements**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][310] NR\_IAB\_Conformance\_Part2 in R4-2017408.

**Decision:** The document was **noted**.

**R4-2016246 Conducted transmitter characteristic test**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this paper, we present our view on conducted transmitter test for IAB RF conformance test work

**Discussion:**

See email discussion summary for [97e][310] NR\_IAB\_Conformance\_Part2 in R4-2017408.

**Decision:** The document was **noted**.

###### 7.4.3.3.2 Receiver characteristics [NR\_IAB-Perf]

**R4-2015442 Radiated conformance testing, Rx requirements**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][310] NR\_IAB\_Conformance\_Part2 in R4-2017408.

**Decision:** The document was **noted**.

**R4-2016247 Conducted receiver characteristic test**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this paper, we present our view on conducted receiver test for IAB RF conformance test work

**Discussion:**

See email discussion summary for [97e][310] NR\_IAB\_Conformance\_Part2 in R4-2017408.

**Decision:** The document was **noted**.

###### 7.4.3.3.3 Other test issues [NR\_IAB-Perf]

##### 7.4.3.4 Radiated conformance testing [NR\_IAB-Perf]

###### 7.4.3.4.1 Transmitter characteristics [NR\_IAB-Perf]

**R4-2016248 Radiated transmitter characteristic test**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this paper, we present our view on OTA Transmitter test for IAB RF conformance test work

**Discussion:**

See email discussion summary for [97e][310] NR\_IAB\_Conformance\_Part2 in R4-2017408.

**Decision:** The document was **noted**.

###### 7.4.3.4.2 Receiver characteristics [NR\_IAB-Perf]

**R4-2016249 Radiated receiver characteristic test**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this paper, we present our view on OTA receiver test for IAB RF conformance test work

**Discussion:**

See email discussion summary for [97e][310] NR\_IAB\_Conformance\_Part2 in R4-2017408.

**Decision:** The document was **noted**.

###### 7.4.3.4.3 Other test issues [NR\_IAB-Perf]

#### 7.4.4 RRM core requirements maintenance [NR\_IAB-Core]

**R4-2017008 Email discussion summary for [97e][209] NR\_IAB\_RRM**

*Type: other For: discussion  
 Source: Moderator (ZTE Corporation)*

**Discussion:**

The contribution summarized email discussion thread [97e][209] NR\_IAB\_RRM. The email thread was moderated by Richie Leo (ZTE) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017279**.

**R4-2017279 Email discussion summary for [97e][209] NR\_IAB\_RRM**

*Type: other For: discussion  
 Source: Moderator (ZTE Corporation)*

(Replaces R4-2017008)

**Discussion:**

The contribution summarized email discussion thread [97e][209] NR\_IAB\_RRM. The email thread was moderated by Richie Leo (ZTE) and treated during RRM session chaired by Andrey Chervyakov (Intel).

1st round email discussion conclusions

**Topic #1: Core requirements maintenance**

Issue 1-1: Conditions under which IAB-MT shall assume no-DRX

Agreement

* Conditions under which IAB-MT shall assume no DRX is used are the same as defined for the UE in section 3.6.1, TS 38.133.

**Topic #2: Perf. requirements and test cases for IAB-MTs**

Agreements:

* Only RRM performance requirements for IAB-MT are needed and the IAB-MT shall be tested with DU part disabled.
* Use conducted testing for IAB type 1-H and OTA testing for IAB type 2-O.
* Define test cases for RRM requirements under NR SA.
* Take UE test cases as baseline when defining test cases for IAB-MTs.
* The performance requirements shall be differentiated between wide area IAB-MT and local area IAB-MT if needed.
* Only unknown target cell should be considered in the testing and only local-area IAB-MT to be tested.
* Don’t define separate test cases of random access for IAB-MT.
* RRM tests are defined in both FR1 and FR2 to verify all IAB-MT requirements defined in TS 38.174.

GTW session (November 11, 2020)

**Issue 2-2-1: Responsible working group**

Agreement: The RRM performance testing requirements shall be defined and maintained in RAN4, and no RAN5 work to be involved.

**Issue 2-2-2: Where to capture TCs**

* Proposals
  + Option 1: Align with the conclusion from RF and Demod sessions and include all performance requirements in a single dedicated spec for IAB. (Huawei)
  + Option 2: New Annex in TS 38.174 (Nokia, Ericsson)
    - Option 2a: New annex in TS 38.174 shall contain IAB-MT RRM test configuration, RRM tests and conditions for bands in which IAB-MT requirements apply. (Ericsson)
* 1st round summary
  + Candidate option: Capture performance test cases in TS 38.174.
  + FFS whether RAN4 defines RRM conformance tests. If yes, where to capture RRM conformance tests. Moderator note: RF and Demod decided to capture conformance tests in a dedicated spec.

Discussion:

Moderator: Consensus is not to define conformance tests. Performance test cases will be captured in TS 38.174.

Chair: why performance test cases are needed while conformance are not needed?

E///: Performance tests may help outside 3GPP. We do not have competence to define conformance tests for RRM. We’ll strive to reuse UE Performance test cases.

Nokia: Need to further check if RRM conformance tests are needed.

Huawei: We prefer to avoid duplicated spec efforts. Current level of details in RRM test cases is sufficient to test IAB devices. No need for dedicated conformance spec.

ZTE: For IAB-MT we should reuse UE test cases as much as possible. It should be sufficient. RRM is a bit different to RF/Demod

Nokia: Not sure if we’ll use system simulator for Demod track. The idea is to adapt RAN5 work and include in RAN4 specs. Seems strange to have RRM requirements without conformance

E///: Issue is not only system simulator. RAN4 developed conformance tests for BS RF and Demod. But for RRM we never developed conformance tests and it was handled by RAN5. We don’t have competence.

Nokia: would like to keep the RRM conformance tests open

E///: it is fine to further discuss

ZTE: should further check with rapporteur (QC) on WI timelines. Conformance tests are time consuming and it may take a long time. So proper planning is needed.

E///: Agree with ZTE. Proponents of conformance test should bring more evidence and additional justifications.

QC: prefer to keep this as FFS

Agreement:

* Define IAB-MT RRM performance requirements.
  + The requirements will be captured in TS 38.174
* FFS whether to define IAB-MT RRM conformance tests
* Specification for IAB-MT RRM conformance tests
  + Option 1: RRM conformance tests be captured in the same specification(s) as RF and Demod conformance.
  + Option 2: RRM Performance and Conformance tests will be captured in the same specification (i.e. 38.174)

**Issue 2-2-2: Whether to define conformance tests for RRM?**

* No (Ericsson, Huawei, ZTE)

**Decision:** The document was **noted**.

**R4-2015508 CR on Link recovery for IAB-MT**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1285 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **withdrawn**.

**R4-2015509 CR on RLM for IAB-MT**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1286 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **withdrawn**.

**R4-2015790 CR on Link recovery for IAB-MT**

*Type: CR For: Agreement  
 38.174 v16.0.0 CR-0001 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The requirement for multiple SMTC configuration (up to 4) is missing in the link recovery requirement for IAB-MT

There are typos need to be fixed.

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **merged**.

**R4-2015791 CR on RLM for IAB-MT**

*Type: CR For: Agreement  
 38.174 v16.0.0 CR-0002 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The requirement for multiple SMTC configuration (up to 4) is missing in the RLM requirement for IAB-MT

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **merged**.

**R4-2016028 DraftCR for TR38.809: IAB RRM general**

*Type: draftCR For: Endorsement  
 38.809 v16.0.0  
 Source: Samsung*

**Abstract:**

Adding general descriptions is to summarize the meeting agreements as Rel-16 RAN4 conclusions and the reference for future release IAB RRM requirement standardization.

**Discussion:**

Chair: Big CR for TR 38.809 planned by Samsung and draft CR will be captured there

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **endorsed**.

**R4-2016170 Symbols, abbreviations and definitions for IAB RRM in 38.174**

*Type: CR For: Agreement  
 38.174 v16.0.0 CR-0003 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

To define missing symbols, abbreviations and definitions related to IAB RRM requirements.

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **revised to R4-2017113**.

**R4-2017113 Symbols, abbreviations and definitions for IAB RRM in 38.174**

*Type: CR For: Agreement  
 38.174 v16.0.0 CR-0003 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016170)

**Discussion:**

Chair: Big CR for TS 38.174 Core part is planned by rapporteur and CRs will be implemented there.

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **endorsed**.

**R4-2016171 Issues with IAB RRM requirements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper analyze some of the issues related to RRM requirements

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **noted**.

**R4-2016382 Correction on IAB RRM requirements in TS 38.174**

*Type: CR For: Agreement  
 38.174 v16.0.0 CR-0005 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Maintenance CR for IAB RRM requirements.

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **revised to R4-2017114**.

**R4-2017114 Correction on IAB RRM requirements in TS 38.174**

*Type: CR For: Agreement  
 38.174 v16.0.0 CR-0005 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016382)

**Discussion:**

Chair: Big CR for TS 38.174 Core part is planned by rapporteur and CRs will be implemented there.

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **endorsed**.

#### 7.4.5 RRM perf. requirements [NR\_IAB-Perf]

**R4-2017115 WF on test cases for IAB-MTs**

*Type: other For: discussion  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **revised to R4-2017383**.

**R4-2017383 WF on test cases for IAB-MTs**

*Type: other For: discussion  
 Source: ZTE Corporation*

(Replaces R4-2017115)

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **approved**.

##### 7.4.5.1 General [NR\_IAB-Perf]

**R4-2014009 Scope of test cases for IAB-MTs**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **withdrawn**.

**R4-2015510 Discussion on performance requirements for IAB**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **noted**.

**R4-2016172 Specification structure for IAB-MT RRM test cases in 38.174**

*Type: CR For: Agreement  
 38.174 v16.0.0 CR-0004 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

To create an annex in TS 38.174 for defining RRM test cases

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **revised to R4-2017117**.

**R4-2017117 Specification structure for IAB-MT RRM test cases in 38.174**

*Type: CR For: Agreement  
 38.174 v16.0.0 CR-0004 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016172)

**Discussion:**

Chair: Big CR will be introduced in the next meeting. Companies are encouraged to follow the agreed spec structured.

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **endorsed**.

**R4-2016173 Principles for IAB RRM test cases**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper discussed general principles for RRM tests for IAB

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **noted**.

**R4-2016174 IAB RRM test case list**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

The paper discussed general principles for RRM tests for IAB

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **noted**.

**R4-2016383 discussion on IAB RRM test cases**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion the RRM test cases for IAB.

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **noted**.

**R4-2016594 Scope of test cases for IAB-MTs**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **noted**.

##### 7.4.5.2 Test cases [NR\_IAB-Perf]

**R4-2014184 [draft CR] Test cases for timing for IAB-MT**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: ZTE Corporation*

**Abstract:**

The test cases for timing of IAB-MTs in FR1 need to be specified in TS 38.174.

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **revised to R4-2017116**.

**R4-2017116 [draft CR] Test cases for timing for IAB-MT**

*Type: draftCR For: Endorsement  
 38.174 v16.0.0  
 Source: ZTE Corporation*

(Replaces R4-2014184)

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **postponed**.

**R4-2015511 Discussion on test cases for IAB**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][209] NR\_IAB\_RRM in R4-2017008.

**Decision:** The document was **noted**.

#### 7.4.6 EMC core requirements maintenance [NR\_IAB-Core]

##### 7.4.6.1 General [NR\_IAB-Core]

**R4-2015026 CR to TS 38.175: IAB definition**

*Type: CR For: Agreement  
 38.175 v16.0.0 CR-0001 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

There are no definitions for IAB type.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **agreed**.

**R4-2015106 CR to TS 38.175 on Voltage dips and interruptions, Release 16**

*Type: CR For: Agreement  
 38.175 v16.0.0 CR-0003 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Performance criteria is updated to reflect considerations on the test levels.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **revised to R4-2017444**.

**R4-2017444 CR to TS 38.175 on Voltage dips and interruptions, Release 16**

*Type: CR For: Agreement  
 38.175 v16.0.0 CR-0003 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015106)

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **agreed**.

**R4-2015107 Definition of Exclusion Bands for IAB EMC nodes**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion paper on Exclusion bands for IAB EMC testing

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **noted**.

**R4-2015108 CR to TS 38.175 on Exclusion Bands**

*Type: CR For: Agreement  
 38.175 v16.0.0 CR-0004 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Definition of Exclusion Band sizes is required to guarantee IAB nodes EMC testing.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **not pursued**.

##### 7.4.6.2 Emission requirements [NR\_IAB-Core]

**R4-2015027 CR to TS 38.175: Radiated emission, IAB**

*Type: CR For: Agreement  
 38.175 v16.0.0 CR-0002 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

The radiated eimssion IAB requirements need to be added.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **revised to R4-2017442**.

**R4-2017442 CR to TS 38.175: Radiated emission, IAB**

*Type: CR For: Agreement  
 38.175 v16.0.0 CR-0002 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE Corporation, Ericsson*

(Replaces R4-2015027)

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **agreed**.

**R4-2015109 Discussion on IAB EMC Radiated Emissions**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion paper on EMC Radiated Emissions for IAB EMC

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **noted**.

**R4-2015110 CR to TS 38.175 on IAB EMC Emission**

*Type: CR For: Agreement  
 38.175 v16.0.0 CR-0005 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Radiated emission limits for IAB node needs to be defined.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **merged**.

##### 7.4.6.3 Immunity requirements [NR\_IAB-Core]

**R4-2015111 Discussion on Spatial Exclusion for IAB EMC RI test**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion paper on Spatial Exclusion for IAB EMC Radiated Immunity Testing

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **noted**.

**R4-2015112 CR to TS 38.175 on Spatial Exclusion for IAB EMC Radiated Immunity test**

*Type: CR For: Agreement  
 38.175 v16.0.0 CR-0006 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Introduction of spatial exclusion concept for IAB EMC CR to TS 38.175 on Spatial Exclusion for IAB EMC Radiated Immunity test.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **revised to R4-2017443**.

**R4-2017443 CR to TS 38.175 on Spatial Exclusion for IAB EMC Radiated Immunity test**

*Type: CR For: Agreement  
 38.175 v16.0.0 CR-0006 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015112)

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **not pursued**.

#### 7.4.7 EMC performance requirements [NR\_IAB-Perf]

**R4-2017445 WF on IAB EMC test/performance requirements**

*Type: other For: discussion  
 Source: ZTE*

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **approved**.

**R4-2015028 Discussion on the performance requirements of IAB EMC**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **noted**.

**R4-2015113 Discussion on IAB EMC performance requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion paper on IAB EMC Performance requirements

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **noted**.

**R4-2015114 CR to TS 38.175 on IAB EMC performance requirements**

*Type: CR For: Agreement  
 38.175 v16.0.0 CR-0007 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Introduction of performance requirements in IAB EMC specification is required to complete the EMC IAB standard.

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **revised to R4-2017446**.

**R4-2017446 CR to TS 38.175 on IAB EMC performance requirements**

*Type: CR For: Agreement  
 38.175 v16.0.0 CR-0007 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015114)

**Discussion:**

See email discussion summary for [97e][304] NR\_EMC in R4-2017402.

**Decision:** The document was **agreed**.

#### 7.4.8 Demodulation and CSI requirements [NR\_IAB-Perf]

##### 7.4.8.1 General [NR\_IAB-Perf]

**R4-2017417 Email discussion summary for [97e][319] NR\_IAB\_Demod**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [97e][319] NR\_IAB\_Demod. The email thread was moderated by Axel Mueller (Nokia Shanghai Bell) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017618**.

**R4-2017618 Email discussion summary for [97e][319] NR\_IAB\_Demod**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2017417)

**Discussion:**

The contribution summarized email discussion thread [97e][319] NR\_IAB\_Demod. The email thread was moderated by Axel Mueller (Nokia Shanghai Bell) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017492 WF on Rel-16 NR IAB demodulation requirements**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][319] NR\_IAB\_Demod in R4-2017417.

**Decision:** The document was **revised to R4-2017673**.

**R4-2017673 WF on Rel-16 NR IAB demodulation requirements**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2017492)

**Discussion:**

See email discussion summary for [97e][319] NR\_IAB\_Demod in R4-2017417.

**Decision:** The document was **approved**.

**R4-2015868 On IAB testing approach**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

General discussion on approach to demodulation testing for IAB

**Discussion:**

See email discussion summary for [97e][319] NR\_IAB\_Demod in R4-2017417.

**Decision:** The document was **noted**.

**R4-2016038 IAB Demodulation Testing**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][319] NR\_IAB\_Demod in R4-2017417.

**Decision:** The document was **noted**.

**R4-2016039 IAB Demodulation Testing**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][319] NR\_IAB\_Demod in R4-2017417.

**Decision:** The document was **noted**.

**R4-2016443 On NR IAB general demodulation requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution, we provide an updated version of IAB demod work plan and our proposal about a possible bigCR work split.

**Discussion:**

See email discussion summary for [97e][319] NR\_IAB\_Demod in R4-2017417.

**Decision:** The document was **noted**.

##### 7.4.8.2 IAB-DU performance requirements [NR\_IAB-Perf]

**R4-2015592 Discussion on NR IAB DU demodulation performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][319] NR\_IAB\_Demod in R4-2017417.

**Decision:** The document was **noted**.

**R4-2015870 IAB-DU demodulation requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Requirements matrix for DU

**Discussion:**

See email discussion summary for [97e][319] NR\_IAB\_Demod in R4-2017417.

**Decision:** The document was **noted**.

**R4-2016444 On NR IAB-DU demodulation requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we extend further our previous contribution on IAB-DU demod and discuss the detailed scope of IAB-DU demodulation performance requirements.

**Discussion:**

See email discussion summary for [97e][319] NR\_IAB\_Demod in R4-2017417.

**Decision:** The document was **noted**.

##### 7.4.8.3 IAB-MT performance requirements [NR\_IAB-Perf]

**R4-2015593 Discussion on NR IAB MT demodulation performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][319] NR\_IAB\_Demod in R4-2017417.

**Decision:** The document was **noted**.

**R4-2015869 IAB-MT demodulation requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Requirements matrix for MT

**Discussion:**

See email discussion summary for [97e][319] NR\_IAB\_Demod in R4-2017417.

**Decision:** The document was **noted**.

**R4-2016433 On NR IAB-MT test setup and demodulation requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this paper, we highlight some critical aspects of IAB technology and architecture, overview the existing BS and UE conformance testing setups, and propose a new IAB-MT test setup. Furthermore, we overview the performance requirements to be re-used/adap

**Discussion:**

See email discussion summary for [97e][319] NR\_IAB\_Demod in R4-2017417.

**Decision:** The document was **noted**.

### 7.5 Multi-RAT Dual-Connectivity and Carrier Aggregation enhancements [LTE\_NR\_DC\_CA\_enh]

#### 7.5.1 RF requirements maintenance [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2016612 Email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][110] LTE\_NR\_DC\_CA\_enh\_RF. The subject for discussion was General, RF requirements. The email thread was moderated by Christian Bergljung (L.M. Ericsson Limited) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016954**.

**R4-2016954 Email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2016612)

**Discussion:**

The contribution summarized email discussion thread [97e][110] LTE\_NR\_DC\_CA\_enh\_RF. The subject for discussion was General, RF requirements. The email thread was moderated by Christian Bergljung (L.M. Ericsson Limited) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2014958 CR to TS 38.101-3 on intra-band contiguous EN-DC BW class (Rel-16)**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0382 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

The intra-band contiguous EN-DC bandwidth class “AB” is missing in Table 5.3B-1 which has already been introduced in the specification.

**Discussion:**

See email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF in R4-2016612.

**Decision:** The document was **agreed**.

**R4-2015036 CR to TS 38.307 on the definition of the duplex-mode for the band configurations**

*Type: CR For: Agreement  
 38.307 v15.6.0 CR-0037 Cat: F (Rel-15)  
  
 Source: ZTE Corporation, CHTTL*

**Abstract:**

In current 38.307 spec, there are no definitions for the ‘duplex-mode’ in the table. Due to there are lots of types of band configurations including ENDC, NR-CA, SUL, etc, it is necessary to add the NOTE in the table to describe the meaning of the ‘duplex-mode’ for a certain type of band configuration, especially more and more types of configurations will be added in future.

Also, several ‘FDD and TDD’ inter-band ENDC for PC3 are defined in Rel-15.

**Discussion:**

See email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF in R4-2016612.

**Decision:** The document was **not pursued**.

**R4-2015037 CR to TS 38.307 on the definition of the duplex-mode for the band configurations**

*Type: CR For: Agreement  
 38.307 v16.4.0 CR-0038 Cat: A (Rel-16)  
  
 Source: ZTE Corporation, CHTTL*

**Discussion:**

See email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF in R4-2016612.

**Decision:** The document was **not pursued**.

**R4-2015556 Discussion on how to support EN-DC band combinations for Roaming UE**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF in R4-2016612.

**Decision:** The document was **noted**.

**R4-2016151 Draft Reply LS to RAN2 on cell-grouping UE capability for synchronous NR-DC**

*Type: LS out For: Approval  
 to RAN2  
 Source: Ericsson GmbH, Eurolab*

**Discussion:**

See email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF in R4-2016612.

**Decision:** The document was **noted**.

**R4-2014486 Draft Reply LS on cell-grouping UE capability for synchronous NR-DC**

*Type: LS out For: Approval  
 to RAN2  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF in R4-2016612.

**Decision:** The document was **noted**.

**R4-2014229 On cell-grouping UE capability for synchronous NR-DC**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

**R4-2014230 Reply LS on cell-grouping UE capability for synchronous NR-DC**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **revised to R4-2016812**.

**R4-2016812 Reply LS on cell-grouping UE capability for synchronous NR-DC**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Apple*

(Replaces R4-2014230)

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **revised to R4-2017844**.

**R4-2017844 Reply LS on cell-grouping UE capability for synchronous NR-DC**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Apple*

(Replaces R4-2016812)

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **revised to R4-2017847**.

**R4-2017847 Reply LS on cell-grouping UE capability for synchronous NR-DC**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: RAN4*

(Replaces R4-2017844)

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **approved**.

**R4-2016435 Correction to PCMAX for contiguous intra-band EN-DC**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0414 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

An error seems to have been introduced into the specification during the implementation of R4-2000454. The configured maximum output power for E-UTRA cell group is not specified for contiguous intra-band EN-DC. Instead, the PCMAX for NR cell group is specified twice.

**Discussion:**

The secretary commented that (on the coversheet) the specification number should read 38.101-3 instead of TS38.101-3. See email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF in R4-2016612.

**Decision:** The document was **revised to R4-2016845**.

**R4-2016845 Correction to PCMAX for contiguous intra-band EN-DC**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0414 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2016435)

**Discussion:**

See email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF in R4-2016612.

**Decision:** The document was **agreed**.

**R4-2016487 On UE capability for distinguishing EN-DC implementation capable for different deployment scenarios**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF in R4-2016612.

**Decision:** The document was **noted**.

#### 7.5.2 RRM core requirements maintenance (38.133/36.133) [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2017009 Email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [97e][210] LTE\_NR\_DC\_CA\_RRM\_1. The email thread was moderated by Lars Dalsgaard (Nokia) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017280**.

**R4-2017280 Email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2017009)

**Discussion:**

The contribution summarized email discussion thread [97e][210] LTE\_NR\_DC\_CA\_RRM\_1. The email thread was moderated by Lars Dalsgaard (Nokia) and treated during RRM session chaired by Andrey Chervyakov (Intel).

GTW session (November 04, 2020)

Topic #1: UE idle mode CA measurement requirements and s-NonIntraSearch.

* Sub-topic #1-1: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are not configured
  + Issue 1-1-1: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are not configured
    - Option 1: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are not configured, follow requirements in section 4.2.2.4 table 4.2.2.4-1
    - Recommended WF: Agree on option 1

Agreement: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are not configured, follow requirements in section 4.2.2.4 table 4.2.2.4-1

* Sub-topic #1-2: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured
  + Issue 1-2-1: Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ (high priority carrier not configured)
    - Option 1: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, and when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ follow requirements in section 4.2.2.4 table 4.2.2.4-1.
    - Option 2: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, and when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ follow other requirements.
      * For companies preferring this option: list exactly which other requirements (section and possibly table).

Discussion:

HW: In our understanding 4.2.2.4 table 4.2.2.4-1 is relevant to inter-frequency. For inter-RAT it should be 4.2.2.5.

Nokia: Yes it is right. Agreement covers inter-freq and can be extended to inter-RAT

Apple: Option 1 is ok. Scaling should be considered.

Agreement:

UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, and when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ follow requirements in section 4.2.2.4 table 4.2.2.4-1.

Same principles will apply for inter-RAT measurements

E-UTRAN measurements when UE is in NR IDLE or INACTIVE mode

NR measurements when UE is in LTE IDLE mode

* + Issue 1-2-2: Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ (high priority carrier configured)
    - Option 1: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, and when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ follow requirements in section 4.2.2.4 table 4.2.2.4-1.
    - Option 2: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, and when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ follow other requirements.
      * For companies preferring this option: list exactly which other requirements (section and possibly table).

Agreement:

UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, and when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ follow requirements in section 4.2.2.4 table 4.2.2.4-1.

Same principles will apply for inter-RAT measurements

E-UTRAN measurements when UE is in NR IDLE or INACTIVE mode

NR measurements when UE is in LTE IDLE mode

* + Issue 1-2-3: Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ (high priority carrier configured)
    - Option 1: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, when Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, and the UE is configured with one or more higher priority carrier, at least follow requirements in section 4.2.2.7.
    - Option 2: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, when Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, and the UE is configured with one or more higher priority carrier, follow other requirements.
      * For companies preferring this option: list exactly which other requirements (section and possibly table).

Discussion:

ZTE: For 7 layers UE will measure for 420s. The max configurable time for T331 is 300s. The feature may not work. Need to increase the value for timer.

QC: Agree with ZTE observation. Other solutions are possible and leave decision up to RAN2.

Apple: ZTE observation is valid. T331 extension is questionable.

HW: Share same concern as Apple that T331 increase will result in higher power consumption. Option 1 may not necessarily lead to issue. Even current requirements are already very close to 60s.

Nokia: Agree with ZTE observation. Prefer to inform RAN2 that the timer is short and it is up to RAN2 whether and how to address it.

ZTE: object the agreement

Candidate agreement:

UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, when Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, and the UE is configured with one or more higher priority carrier, at least follow requirements in section 4.2.2.7.

Send LS to RAN2 to inform on the agreement and RAN4 observations that the measurement duration can exceed the maximum configurable duration of T331 timer but there is no consensus in RAN4 whether the timer value needs to be increased. It is up to RAN2 whether and how to resolve the issue.

* + Issue 1-2-4: Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ (high priority carrier not configured)
    - Option 1: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, when Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, and the UE is not configured with one or more higher priority carrier, at least follow requirements in section 4.2.2.7.
    - Option 2: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, when Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, and the UE is not configured with one or more higher priority carrier, at least follow requirements in section 4.2.2.4 table 4.2.2.4-1.

Discussion:

Nokia: Prefer Option 2.

ZTE: We can support Option 2.

MTK: Option 1 is more simple. The conclusion will depend on conclusion in 1-2-3.

HW: Same view as MTK. Option 2 is more complex.

Apple: prefer Option 1.

QC: prefer Option 1

Nokia: not sure that Option 2 has higher complexity. For Option 1 we need to inform RAN2 since this contradicts their agreements.

ZTE: we agree with Nokia. Option 2 is aligned with RAN2 conclusions that EMR measurements do not depend on the threshold.

1st round email discussion conclusions

**Topic #2: Overlapping and non-overlapping carriers**

GTW session (November 12, 2020)

**Open Core aspects:**

Issue 2-10-2: Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ (high priority carrier not configured) (was Issue 1-2-4)

* Proposals (original in 1st round)
  + Option 1: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, when Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, and the UE is not configured with one or more higher priority carrier, at least follow requirements in section 4.2.2.7 (MTK, Apple, QC, Huawei)
  + Option 2: UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, when Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, and the UE is not configured with one or more higher priority carrier, at least follow requirements in section 4.2.2.4 table 4.2.2.4-1. (Nokia, ZTE)
* Discussion
  + ZTE: can go with Option 1. Prefer to send LS to RAN2 to inform on possible issue for Option 1.
  + Nokia: Option 1 can prevent NW to use search threshold under certain conditions. It will impact all UEs in the cell.
  + Nokia: Can compromise to Option 1. Suggest to include the agreements into the LS.
* Agreement
  + UE measurement requirements for idle mode CA measurements, when SnonIntraSearchP/Q are configured, when Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, and the UE is not configured with one or more higher priority carrier, at least follow requirements in section 4.2.2.7

**Open Performance Aspects:**

Issue 4-11-1: Which serving carrier scenarios to consider.

* Agreement: Define test cases for the following conditions
  + NR FR1 carrier
  + LTE carrier

Issue 4-11-4: Which target cell type (detected cell at connection release or not) to consider.

* Agreements: Define test cases for the following conditions
  + Target cell is detected at connection release and fulfil the conditions for a detected cell during state transition and Idle mode.
  + Target cell is new cell.

Issue 4-11-5: Beam level measurements.

* Agreement: Define test cases for the following conditions
  + Idle mode CA measurement report is requested with beam level measurements.
  + Idle mode CA measurement report is not requested with beam level measurements.
  + Note: Applicability rules for UEs with and without beam-level measurements capabilities are FFS

Issue 4-11-6: s-NonIntraSearch thresholds configured.

* Agreement: Define test cases for the following conditions
  + Idle mode CA measurement report and s-NonIntraSearch thresholds are configured
    - Define test case for the scenario when the side conditions are above the threshold
  + Idle mode CA measurement report and s-NonIntraSearch thresholds are not configured.

**Decision:** The document was **noted**.

**R4-2017010 Email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][211] LTE\_NR\_DC\_CA\_RRM\_2. The email thread was moderated by Joakim Axmon (Ericsson) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017281**.

**R4-2017281 Email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2017010)

**Discussion:**

The contribution summarized email discussion thread [97e][211] LTE\_NR\_DC\_CA\_RRM\_2. The email thread was moderated by Joakim Axmon (Ericsson) and treated during RRM session chaired by Andrey Chervyakov (Intel).

GTW session (November 04, 2020)

Topic #1: Core requirement maintenance

* Sub-topic 1-1: Direct SCell Activation
  + Issue 1-1-2: TCI state activation at Direct SCell activation
    - Option 1 (MediaTek): Send LS to RAN2 on that missing TCI state activation in RRC command for Direct SCell activation reduces benefit of the feature.

Discussion

ZTE: TCI state information can be carried in the RRC signalling. Do not fully understand the issue here.

QC: can ZTE point to the specific section?

Apple: NW still needs to send MAC for TCI state activation after Direct SCell activation.

HW: need more time to check. There may be impact on RAN2 signalling and UE implementation. By default the TCI state activation is done via MAC and activation using RRC may have impact on UE.

MTK: Do not expect impact on legacy UE implementation. It might create new UE behavior.

ZTE: now understand the issue. The proposal is a kind of optimization and should not be discussed here.

HW: what do we suggest in the LS?

MTK: inform RAN2 that there is some issue and recommend to add the TCI state in RRC command. It does not mean UE needs to support. We can have a separate UE capability for the new behavior.

NEC: share same concern as HW. We may not need to include the solution in the LS to RAN2.

E///: Agree with NEC that we can inform RAN2 on observations. The solution can be left up to RAN2.

ZTE: we need to discuss in RAN4 whether such optimizations are needed in Rel-16 or later. For the LS we agree that we can just inform RAN2 while the decision shall be up to RAN2.

HW: we agree with E///, NEC, ZTE. We would like to understand the drawbacks of not having such configuration.

Chair: continue discussion

* Sub-topic 1-2: SCell dormancy
  + Issue 1-2-2: Rate of ACK/NACK feedback loss on non-dormant serving cells resulting from CQI measurements and RRM measurements on dormant SCells
    - Option 1 (Qualcomm): Relax interruption requirements from X=0.5% to X=2% for non-dormant serving cell which either is intra-band contiguous to dormant serving cell, or is in a different band to the dormant serving cell.

Discussion:

E///: another alternative is to clarify that X=0.5% applies separately for CQI measurements and RRM measurements to be on par with LTE.

HW: the proposed alternative is agreeable

Nokia: agree

Apple: agree with QC observation but X = 2% can be too much. Open for other approaches.

QC: ok with 0.5% for CSI and prefer larger value for RRM (e.g. 1%)

MTK: need to have internal check

ZTE: would like to understand why RRM measurements need larger X

QC: 0.5% are coming from LTE. In LTE we have wideband CRS signals. In NR we have narrowband SSB.

E///: in LTE the measurements are based on center 6RBs. Ok to look into concerns QC raised.

Agreement: Rate of ACK/NACK feedback loss on non-dormant serving cells resulting from CQI measurements and RRM measurements on dormant SCells is X = 0.5% for each of CQI measurements and X = [1.0%] for RRM measurements

Topic #3: Cross Carrier scheduling of Active BWP switch

* Sub-topic 3-1: Active BWP switching delay under Cross Carrier Scheduling
  + Issue 3-1-1: Active BWP switching delay for single CC
    - Option 1a (Huawei): Active BWP switching delay is relaxed by 1 slot at smaller SCS of scheduling and scheduled cells when cross carrier scheduling is used.
    - **Option 1b (Qualcomm): Active BWP switching delay is relaxed by 1 slot at smaller SCS of scheduling cell, scheduled cell before and scheduled cell after active BWP change when cross carrier scheduling is used.**
    - Option 1c (NEC): Active BWP switching delay is relaxed by 1 slot when cross carrier scheduling is used.
    - Option 2 (Ericsson): Active BWP switching delay is relaxed by Y OFDM symbol durations at SCS of scheduling cell (µPDCCH) when cross carrier scheduling is used.
      * If SCS of scheduling and scheduled cells are the same: Y=0
      * If SCS of scheduling and scheduled cells are different:

|  |  |
| --- | --- |
| µPDCCH | Y [symbol durations] |
| 0 | 4 |
| 1 | 5 |
| 2 | 10 |
| 3 | 14 |

Agreement: Active BWP switching delay is relaxed by 1 slot at smaller SCS of scheduling cell, scheduled cell before and scheduled cell after active BWP change when cross carrier scheduling is used.

* + Issue 3-1-2: Active BWP switching delay for multiple CCs
    - Option 1a (Huawei): Active BWP switching delay is relaxed by 1 slot at smaller SCS of scheduling and scheduled cells when cross carrier scheduling is used.
    - Option 1b (Qualcomm): Active BWP switching delay is relaxed by 1 slot at smaller SCS of scheduling cell, scheduled cells before and scheduled cells after active BWP change when cross carrier scheduling is used. is clarified as being the longer for any of the scheduled cells, had each scheduled cell been the only one triggered.



* + - Option 1c (NEC): Active BWP switching delay is relaxed by 1 slot when cross carrier scheduling is used.
    - Option 2 (Ericsson): Active BWP switching delay is relaxed by Y OFDM symbol durations at SCS of scheduling cell (µPDCCH) when cross carrier scheduling is used.
      * If SCS of scheduling and scheduled cells are the same: Y=0
      * If SCS of scheduling and scheduled cells are different:

|  |  |
| --- | --- |
| µPDCCH | Y [symbol durations] |
| 0 | 4 |
| 1 | 5 |
| 2 | 10 |
| 3 | 14 |

Agreement: Active BWP switching delay is relaxed by 1 slot at smaller SCS of scheduling cell, scheduled cells before and scheduled cells after active BWP change when cross carrier scheduling is used. is clarified as being the longer for any of the scheduled cells, had each scheduled cell been the only one triggered.



Topic #4: Test cases

* Sub-topic 4-1: Test case list for Direct SCell activation
  + Issue 4-1-4: Functionality to be tested
    - Option 1 (Huawei): Direct activation upon SCell addition
    - Option 2 (Ericsson): Direct activation upon SCell addition, handover, and RRC resume
    - Option 3: Direct activation upon SCell addition, handover

Agreement: Direct activation upon SCell addition, handover

1st round email discussion conclusions

**Topic #1: Core requirement maintenance**

Issue 1-1-1: Starting point for interruption window at Direct SCell activation

Agreement

* Remove HARQ-ACK time from the earliest possible starting point of an interruption window for Direct SCell activation (clauses 8.3.4 and 8.3.9).

Issue 1-2-1: Removal of Editor’s Note following RAN1 agreement

Agreement

* Remove Editor’s Note since related RAN1 agreement has been reached and is in line with existing specification text in 38.133

**Topic #2: Non-aligned frame borders and interruptions**

Issue 2-1-1: Clarify the CA with non-aligned frame border scenario

Agreement

* Clarify impact of CA with non-aligned frame borders on SCC interruption length due to measurement gaps.

**Topic #3: Cross Carrier scheduling of Active BWP switch**

**Topic #4: Test cases**

GTW session (November 12, 2020)

Moderator: is R4-2017123 agreeable?

Chair: no comments received and WF is agreeable.

**Decision:** The document was **noted**.

**R4-2017118 WF on MR-DC RRM requirements for Idle mode CA measurements**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **revised to R4-2017357**.

**R4-2017357 WF on MR-DC RRM requirements for Idle mode CA measurements**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2017118)

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **approved**.

**R4-2017119 LS on RAN4 agreements for MR-DC Idle mode CA measurements**

*Type: LS out For: Approval  
 to RAN2  
 Source: ZTE*

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **revised to R4-2017356**.

**R4-2017356 LS on RAN4 agreements for MR-DC Idle mode CA measurements**

*Type: LS out For: Approval  
 to RAN2  
 Source: ZTE*

(Replaces R4-2017119)

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **revised to R4-2017390**.

**R4-2017390 LS on RAN4 agreements for MR-DC Idle mode CA measurements**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAn4*

(Replaces R4-2017356)

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **approved**.

**R4-2017123 WF on RRM Core requirements maintenance in MR-DC RRM 2**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **approved**.

**R4-2017124 LS on TCI state indication at Direct SCell activation**

*Type: LS out For: Approval  
 to RAN2, RAN2  
 Source: MediaTek*

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **revised to R4-2017329**.

**R4-2017329 LS on TCI state indication at Direct SCell activation**

*Type: LS out For: Approval  
 to RAN2, RAN1  
 Source: RAN4*

(Replaces R4-2017124)

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **approved**.

**R4-2014359 Discussion on interruption time for unaligned CA scenarios**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

**R4-2014360 CR on TS38.133 interruption time for CA with non-aligned frame boundaries**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1156 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

The total interruption time for the CA with non-aligned frame boundaries scenario does not consider and count the time duration of the slot which is partially overlapped with the measurement gap.

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **revised to R4-2017128**.

**R4-2017128 CR on TS38.133 interruption time for CA with non-aligned frame boundaries**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1156 rev 1 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

(Replaces R4-2014360)

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **revised to R4-2017330**.

**R4-2017330 CR on TS38.133 interruption time for CA with non-aligned frame boundaries**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1156 rev 2 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

(Replaces R4-2017128)

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **agreed**.

##### 7.5.2.1 Early Measurement reporting [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2014361 Discussion on LTE CRS based and NR SSB based measurement in NR IDLE/INACTIVE mode**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

**R4-2014362 CR on TS38.133 for measurement capability of IDLE mode DCCA measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1157 Cat: F (Rel-16)  
  
 Source: MediaTek inc., Huawei, HiSilicon*

**Abstract:**

UE requirement for MR-DC early measurement reporting in TS 38.133 is not finalized and following modifications are needed:

1. In WF agreed in RAN4 #95e, the agreed measurement capability is total number of LTE inter-RAT EMR carriers ≤7, not total number of FDD E-UTRA inter-RAT carriers ≤7 and total number of TDD E-UTRA inter-RAT carriers ≤7.

2. The measurement capabilities for UE supporting inter-freq. or inter-RAT EMR measurement in NR IDLE/INACTIVE mode are specified in different sections 4.2.2.1 and 4.3.2.2. A clarification must be added to show that measurement capabilities in section 4.2.2.1 and in section 4.3.2.2 should be simultaneously followed.

3. RAN2’s capability names have been updated to idleInactiveEUTRA-MeasReport-r16 and idleInactiveNR-MeasReport-r16.

4. Complete the measurement requirement of overlapping and non-overlapping early measurement reporting

5. Introduce the requirement for beam level reporting

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **merged**.

**R4-2015587 Remaining issues on NR EMR**

*Type: discussion For: Discussion  
 Source: ZTE*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

**R4-2015742 Discussion on remaining issues in EMR requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

**R4-2015743 CR on EMR requirements in 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6976 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon, MediaTek*

**Abstract:**

Core requirements for LTE-NR inter-RAT EMR are incomplete.

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **revised to R4-2017121**.

**R4-2017121 CR on EMR requirements in 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6976 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon, MediaTek*

(Replaces R4-2015743)

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **revised to R4-2017354**.

**R4-2017354 CR on EMR requirements in 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6976 rev 2 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon, MediaTek*

(Replaces R4-2017121)

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **agreed**.

**R4-2015881 Early Measurement Reporting**

*Type: discussion For: Approval  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

**R4-2015882 CR on UE requirement for MR-DC early measurement reporting in 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6985 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

UE requirements for MR-DC early measurement reporting in TS 36.133 are not finalized. This CR brings changes for finalization of the feature.

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **merged**.

**R4-2015883 CR on UE requirement for MR-DC early measurement reporting in 38.133**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1338 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

UE requirements for MR-DC early measurement reporting in TS 38.133 are not finalized. This CR brings changes for finalization of the feature.

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **revised to R4-2017120**.

**R4-2017120 CR on UE requirement for MR-DC early measurement reporting in 38.133**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1338 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015883)

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **revised to R4-2017355**.

**R4-2017355 CR on UE requirement for MR-DC early measurement reporting in 38.133**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1338 rev 2 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2017120)

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **agreed**.

**R4-2016388 Updates in EMR requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1374 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

RAN4 has agreed on the definition overlapping/non-overlapping carriers in R4-2005847, but their definitions are still missing in the specification.

The terminology “EMR”, “early measurement reporting”, “idle CA measurements”, “idle CA/DC measurements”, are used inconsistently across specification, etc.

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **merged**.

**R4-2016389 Updates in EMR requirements**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6998 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

RAN4 has agreed on the definition overlapping/non-overlapping carriers in R4-2005847, but their definitions are still missing in the specification.

Also, the EMR measurements are inconsistently referred to as idle mode measurements, DC measurements, etc.

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **merged**.

**R4-2016573 Early measurement reporting in MR-DC**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

##### 7.5.2.2 Efficient and low latency serving cell configuration, activation and setup [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2014363 Discussion on direct Scell activation**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **noted**.

**R4-2014629 Discussion on TCI state activation in direct SCell activation**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **noted**.

**R4-2015301 Discussion on RRM requirements for SCell dormancy**

*Type: discussion For: Approval  
 Source: NEC*

**Abstract:**

Discussion on BWP switch delay for dormancy transition of multiple SCells

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **noted**.

**R4-2015744 Discussion on remaining issues in SCell dormancy and cross-carrier scheduled BWP switching**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **noted**.

**R4-2015745 CR on BWP switching and SCell dormancy**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1322 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In SCell dormancy delay requirement, there is an editor note pending on RAN1 conclusion on whether dormancy indication within DCI 0\_1/1\_1 can be received after first 3 OFDM symbols in a slot or not. RAN1 has agreed that there is no restriction, so the editor note can be removed.

The BWP switching requirements for cross-carrier scheduling case need to be defined.

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **revised to R4-2017125**.

**R4-2017125 CR on BWP switching and SCell dormancy**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1322 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015745)

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **agreed**.

**R4-2016020 CR 38.133 Removal of brackets for SCell Dormancy and Direct SCell Activation**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1348 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

SCell Dormancy: The specification text contains requirements on maximum rate of interruptions resulting from RRM and CSI measurements on dormant SCell. The value, [0.5]%, is within brackets.

Direct SCell activation: The specification text contains side condition on number of SCells that can be directly activated simultaneously. The value, [2], is within brackets.

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **revised to R4-2017304**.

**R4-2017304 CR 38.133 Removal of brackets for SCell Dormancy and Direct SCell Activation**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1348 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016020)

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **agreed**.

**R4-2016021 CR 36.133 Removal of brackets for NR SCell Dormancy**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6988 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

SCell Dormancy: The specification text contains requirements on maximum rate of interruptions resulting from RRM and CSI measurements on dormant NR SCell. The value, [0.5]%, is within brackets.

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **revised to R4-2017127**.

**R4-2017127 CR 36.133 Removal of brackets for NR SCell Dormancy**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6988 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016021)

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **agreed**.

**R4-2016570 Dormant and Non-dormant BWP switching**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **noted**.

**R4-2016575 Staring point of an Interruption window at Direct SCell activation**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **noted**.

**R4-2016584 CR to Staring point of an Interruption window at Direct SCell activation**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1401 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

In the current version of 38.133, the earliest possible starting point of an interruption window due to Direct SCell activation at SCell addition is limited to the time after the corresponding HARQ-ACK transmission, which is not aligned with other interruption requirements for RRM based command execution.

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **agreed**.

**R4-2017126 CR to Staring point of an Interruption window at Direct SCell activation**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1401 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **withdrawn**.

**R4-2015504 CR on BWP switching delay on mulitple CCs**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1283 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The requirements for cross carrier DCI-based BWP switching delay on multiple CCs should be added in Rel-16.

The defination of N in non-simultaneous RRC-based BWP switch is refered to the simultaneous BWP switch. However, for non-simultaneous case, N could also be one for the single CC BWP switch.

There are some editorial errors need to be fixed.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **revised to R4-2017129**.

**R4-2017129 CR on BWP switching delay on mulitple CCs**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1283 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015504)

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **agreed**.

#### 7.5.3 RRM perf. requirements (38.133) [LTE\_NR\_DC\_CA\_enh-Perf]

**R4-2017122 WF on Test cases for MR-DC Idle mode CA measurements**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **revised to R4-2017358**.

**R4-2017358 WF on Test cases for MR-DC Idle mode CA measurements**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2017122)

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **approved**.

**R4-2017130 WF on Test Cases for Direct SCell Activation and SCell Dormancy**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **approved**.

**R4-2017359 Draft Big CR: Introduction of Rel-16 MR-DC EMR RRM performance requirements (TS 38.133)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Nokia*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2017360 Draft Big CR: Introduction of Rel-16 MR-DC EMR RRM performance requirements (TS 36.133)**

*Type: draftCR For: Endorsement  
 36.133 v16.7.0  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

##### 7.5.3.1 General [LTE\_NR\_DC\_CA\_enh-Perf]

**R4-2014368 Discussion on performance part for SCell dormancy**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

**R4-2015746 Discussion on accuracy requirements for EMR**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

**R4-2015747 draftCR to introduce accuracy requirements for EMR 38.133**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Measurement accuracy requriements need to be defind for EMR.

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **postponed**.

**R4-2015748 draftCR to introduce accuracy for EMR 36.133**

*Type: draftCR For: Endorsement  
 36.133 v16.7.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Measurement accuracy requriements need to be defind for EMR.

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **revised to R4-2017327**.

**R4-2017327 draftCR to introduce accuracy for EMR 36.133**

*Type: draftCR For: Endorsement  
 36.133 v16.7.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015748)

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **endorsed**.

**R4-2016017 General discussion on MR-DC RRM test cases**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Background information on proposal of test case list and time plan for MR-DC RRM test cases.

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

**R4-2016378 Accuracy requirements for MR-DC EMR (36.133)**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6995 Cat: F (Rel-16)  
  
 Source: Nokia Corporation*

**Abstract:**

Introduction of accuracy requirements for MR-DC EMr idle mode measurements.

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **postponed**.

**R4-2016386 Accuracy requirements for MR-DC EMR (38.133)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1373 Cat: F (Rel-16)  
  
 Source: Nokia Corporation*

**Abstract:**

Introduction of accuracy requirements for MR-DC EMr idle mode measurements.

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **revised to R4-2017328**.

**R4-2017328 Accuracy requirements for MR-DC EMR (38.133)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1373 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia Corporation*

(Replaces R4-2016386)

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **revised to R4-2017361**.

**R4-2017361 Accuracy requirements for MR-DC EMR (38.133)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1373 rev 2 Cat: F (Rel-16)  
  
 Source: Nokia Corporation*

(Replaces R4-2017328)

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **endorsed**.

**R4-2016571 Performance requirements for Dormant SCell**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

##### 7.5.3.2 Test cases [LTE\_NR\_DC\_CA\_enh-Perf]

**R4-2014369 CR on TS38.133 for NR FR1**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

**Abstract:**

The SCell dormancy is introduced in Rel-16 so that UE can achieve power saving. In last meeting, it has been agreed that the test case for SCell dormancy shall be defined in RRM performance part. Thus, the test case “NR FR1 – NR FR1 SCell dormancy in SA” is provided in this CR.

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **postponed**.

**R4-2015749 Discussion on RRM test for MR-DC enhancement**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

**R4-2015884 Discussion on test cases for MD-DC EMR**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

**R4-2016018 MR-DC RRM test case list and time plan**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Proposed test case list and time plan for MR-DC RRM test cases.

**Discussion:**

See email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 in R4-2017009.

**Decision:** The document was **noted**.

#### 7.5.4 Demodulation and CSI requirements (38.101-4) [LTE\_NR\_DC\_CA\_enh-Perf]

**R4-2017418 Email discussion summary for [97e][320] MR\_DC\_Demod**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][320] MR\_DC\_Demod. The email thread was moderated by Kazuyoshi Uesaka (Ericsson Japan K.K.) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017493 Way forward on UE demodulation and CSI reporting requirements for MR-DC and CA enhancements**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][320] MR\_DC\_Demod in R4-2017418.

**Decision:** The document was **approved**.

**R4-2015594 Discussion on Multi-RAT Dual-Connectivity and Carrier Aggregation enhancements demodulation performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][320] MR\_DC\_Demod in R4-2017418.

**Decision:** The document was **noted**.

**R4-2015815 UE demodulation requirements for WI on MR-DC and CA enhancements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution discusses the impacts to UE demodulation and CSI reporting requirements due to WI on MR-DC and CA enhancements

**Discussion:**

See email discussion summary for [97e][320] MR\_DC\_Demod in R4-2017418.

**Decision:** The document was **noted**.

### 7.6 UE power saving in NR [NR\_UE\_pow\_sav]

**R4-2017011 Email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM**

*Type: other For: discussion  
 Source: Moderator (CATT)*

**Discussion:**

The contribution summarized email discussion thread [97e][212] NR\_UE\_pow\_sav\_RRM. The email thread was moderated by Yuexia Song (CATT) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017282**.

**R4-2017282 Email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM**

*Type: other For: discussion  
 Source: Moderator (CATT)*

(Replaces R4-2017011)

**Discussion:**

The contribution summarized email discussion thread [97e][212] NR\_UE\_pow\_sav\_RRM. The email thread was moderated by Yuexia Song (CATT) and treated during RRM session chaired by Andrey Chervyakov (Intel).

1st round email discussion conclusions

**Topic #1: RRM core requirements maintenance**

Issue 1-2: Do you think subclause 4.2.2.9.4 and 4.2.2.10.4 should be removed from 38.133 given the measurement relaxation requirements when both low mobility and not-at-cell-edge criteria are fulfilled has been defined in 38.304?

Agreement: Do not remove subclause 4.2.2.9.4 and 4.2.2.10.4

Issue 1-3: If HighpriorityRelax is configured and UE fulfils low mobility criterion, whether to remove the descriptions on requirements on UE behaviours when Srxlev > SnonIntraSearchP, Squal > SnonIntraSearchQ in subclause 4.2.2.10.2 and 4.2.2.11.2 of 38.133?

Agreement: Do not remove description

**Topic #2: RRM measurement relaxation-Perf. Part**

Issue 2-1-2: Whether to have different priority frequency layers for inter-frequency/inter-RAT in the same test?

Agreement: Use different priority frequency layers for inter-frequency/inter-RAT in the same test

Issue 2-1-3: Whether to include high priority layer cell search for inter-frequency/inter-RAT?

Agreement: Exclude high priority layer cell search for inter-frequency/inter-RAT

Issue 2-1-8: Whether to exclude the cell search process from test repetition or not

Agreement: Exclude the cell search process from test repetition

GTW session (November 10, 2020)

Moderator: still 5 open issues to be resolved in the 2nd round.

Issue 2-1-4: If option 4 of issue 2-1-1 is agreeable, whether to design two round (to and back) cell reselection process for inter-frequency/inter-RAT in power saving test cases?

* Option 1: No
* Option 2: Yes. Two round (to and back) cell reselection process is considered for inter-frequency/ inter-RAT in power saving test cases.
* *Note: Test repetition will be done between cell 1 and cell 2 during the test.*

Discussion:

Huawei: Option 2.

vivo: Option 2.

MTK: For FR1 we support Option 2. For FR2 we prefer Option 1 since the TE may not be able to provide 47dB margin for the test.

HW: In the last meeting we agreed for a another FR2 test that UE should do calibration first and then do the test.

MTK: Not sure that calibration can resolve the issue

R&S: calibration was done for the PRACH tests. Need further check if it works for cell reselection test.

E///: we’ll need to come back in the next meeting. Many open issues left. Not sure we can finish

CATT: we can give a try to complete as much as possible

HW: Is the issue only for FR2 inter-frequency?

MTK: only for FR2 inter-frequency

Agreement:

FR1: Use two round (to and back) cell reselection process for inter-frequency/ inter-RAT in power saving test cases

FR2: Use two round (to and back) cell reselection process for inter-frequency in power saving test cases. Further check on TE feasibility for FR2.

Use two round (to and back) cell reselection process for intra-frequency power saving test cases.

Issue 2-1-6: How to reflect the low mobility criterion by threshold setting?

* Option 1: 3dB for FR1 and 6dB for FR2 because 3dB is not enough for FR2
* Option 2: 3dB

Agreement: 3dB for FR1 and 6dB for FR2

Issue 2-1-7: How to reflect the not-at-cell-edge criterion by threshold setting?

SSearchThresholdP is configured to Srxlev – X (dB), where X>=4.5dB for FR1 and X>=6dB for FR2.

* Option 1: X=4.5dB for FR1 and X=6dB for FR2.
* Option 2: If Option1 is not agreeable, please give your recommendation on X for FR1 and FR2.

Discussion:

MTK: Suggest alternative values.

Inter-frequency: X = 6dB for FR1, X = 7.5dB for FR2

Intra-frequency: X = 3dB for FR1, X = 4.5dB for FR2

Inter-RAT: X = 6dB for FR1, X = 6dB for FR2

vivo: prefer to use same values for different scenarios.

MTK: one option is to have X = 6dB for FR1, X = 7.5dB for FR2 for all

HW: ok with such values

Xiaomi: no strong view.

Agreement: X = 6dB for FR1, X = 7.5dB for FR2

Issue 2-1-9: Whether to use shorter DRX cycle and shorter TSI-NR to improve test efficiency or not?

* Option 1: DRX cycle length = 0.64s TSI-NR = 0.64s
* Option 2: DRX cycle length = 0.64s TSI-NR = 1280ms

Agreement: DRX cycle length = 0.64s TSI-NR = 1280ms

Issue 2-1-10: How to reflect UE gain G in FR2?

* Option 1: leave the threshold impacted by G as [TBD] and discuss it in the next meeting.
* Option 2: Please recommend, if any.

**Decision:** The document was **noted**.

#### 7.6.1 RRM core requirements maintenance (38.133) [NR\_UE\_pow\_sav-Core]

**R4-2014408 CR for TS38.133, Remove duplication definition for measurement requirements for power saving**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1169 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

The applicability of relaxed measurement requirements for EMR is defined clearly in TS38.304. The conditions of “T331 timer is not running…” in current specification is not accurate and duplicated.

1 hour measurement interval has been defined in TS38.304, and no tested will be defined in RAN4. The measurements for UE fulfillslow mobility and not-at-cell edge criteria are duplicated and may lead to misalignment with RAN2 specification.

For measurement requirements for higher priority carrier for inter frequency and inter-RAT when UE fulfills not-at-cell edge criterion are normal requirements, they need not be defined in clause 4.2.2.10.3 and 4.2.2.11.3.

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **not pursued**.

**R4-2014527 Discussion on remaining issues of R16 UE power saving**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **noted**.

**R4-2014528 CR on RRM relaxation in R16 UE power saving**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1185 Cat: F (Rel-16)  
  
 Source: vivo*

**Abstract:**

Removed duplicated descriptions which are already captured in TS 38.304.

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **not pursued**.

**R4-2015482 Correction CR to Rel-16 UE power saving requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1275 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Correct some mistakes;

Made some clarifications

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **revised to R4-2017131**.

**R4-2017131 Correction CR to Rel-16 UE power saving requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1275 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015482)

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **agreed**.

**R4-2015574 CR to 38.133: Correction to relaxed measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1305 Cat: F (Rel-16)  
  
 Source: ZTE*

**Abstract:**

In TS38.331 v16.2.0, the combineRelaxedMeasCondition-r16 is defined as follows.

relaxedMeasurement-r16 SEQUENCE {

…

combineRelaxedMeasCondition-r16 ENUMERATED {true} OPTIONAL, -- Need R

…

}

The IE is either absent or configured as true.

However in TS38.133 v16.5.0 the requirement is specified as follows.

“…and combineRelaxedMeasCondition [2] not configured or configured but set to FALSE, …”

The IE cannot be set to FALSE so the requirement is incorrect.

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **agreed**.

**R4-2016066 CR for correcting wrong requirement for UE fulfilling not-at-cell edge criterion for measurement relaxation**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1359 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Current version of the specification wrongly lists a parameter related to low mobility condition in the section relative to UE fulfilling not-at-cell edge condition

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **not pursued**.

**R4-2016146 Corrections to UE power saving requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1360 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

During the transition period UE is required to apply a certain types of requirements, but it is not clear what they are or where they are defined. Also some references are corrected.

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **revised to R4-2017132**.

**R4-2017132 Corrections to UE power saving requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1360 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016146)

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **agreed**.

#### 7.6.2 RRM perf. requirements (38.133) [NR\_UE\_pow\_sav-Perf]

**R4-2014455 Work plan for power saving RRM test cases**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **revised to R4-2017135**.

**R4-2017135 Work plan for power saving RRM test cases**

*Type: other For: Approval  
 Source: CATT*

(Replaces R4-2014455)

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **approved**.

**R4-2017133 WF on RRM test cases for power saving**

*Type: other For: discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **approved**.

**R4-2017134 Big CR: Introduction of Rel-16 NR UE Power Saving RRM Performance requirements (TS 38.133)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1409 Cat: B (Rel-16)  
  
 Source: CATT*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

##### 7.6.2.1 General [NR\_UE\_pow\_sav-Perf]

**R4-2014370 Discussion on performance part for cell reselection**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **noted**.

**R4-2014657 Discussion on test cases for power saving RRM**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **noted**.

**R4-2014835 Considerations on test cases for UE power saving RRM**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **noted**.

**R4-2016147 Discussions on UE power saving performance requirements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss and provide our view on the open issues in performance part that were identified at last meeting.

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **noted**.

##### 7.6.2.2 Test cases [NR\_UE\_pow\_sav-Perf]

**R4-2014371 CR on TS38.133 for cell reselection to FR1 inter-RAT E-UTRA test case with low mobility criterion**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

**Abstract:**

The low mobility and not-at-cell edge criterion are introduced in Rel-16 so that UE can measure neighboring cell with relaxed measurement time. On the other hands, in last meeting, it has been agreed that the test case for cell reselection to lower priority E-UTRAN shall be defined in RRM performance part. Thus, the proposed test cases are provided in this CR.

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **revised to R4-2017136**.

**R4-2017136 CR on TS38.133 for cell reselection to FR1 inter-RAT E-UTRA test case with low mobility criterion**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

(Replaces R4-2014371)

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **endorsed**.

**R4-2014409 Discussion on RRM test cases for power saving**

*Type: discussion For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **noted**.

**R4-2014410 CR for TS38.133, test case for cell reselection to FR1 intra-frequency NR case for power saving**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1170 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

It is agreed that the test cases for relaxed RRM measurement requirements should be defined.

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **revised to R4-2017137**.

**R4-2017137 CR for TS38.133, test case for cell reselection to FR1 intra-frequency NR case for power saving**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1170 rev 1 Cat: B (Rel-16)  
  
 Source: CATT*

(Replaces R4-2014410)

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **endorsed**.

**R4-2014656 RRM test cases for NR UE power saving**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

**Abstract:**

Add the RRM test cases for Rel-16 NR UE power saving

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **revised to R4-2017138**.

**R4-2017138 RRM test cases for NR UE power saving**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

(Replaces R4-2014656)

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **endorsed**.

**R4-2014836 CR for test case for cell reselection to FR1 inter-RAT E-UTRA for not at cell edge criterion**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1205 Cat: B (Rel-16)  
  
 Source: vivo*

**Abstract:**

Add test case for cell reselection to FR1 inter-RAT E-UTRA for not at cell edge criterion

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **revised to R4-2017139**.

**R4-2017139 CR for test case for cell reselection to FR1 inter-RAT E-UTRA for not at cell edge criterion**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1205 rev 1 Cat: B (Rel-16)  
  
 Source: vivo*

(Replaces R4-2014836)

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **endorsed**.

**R4-2015483 Discussion on test cases for measurement relaxation in power saving**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **noted**.

**R4-2015484 Test case for cell reselection to FR2 intra-frequency NR case for UE configured with relaxed measurement**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Specify the test case for Cell reselection to FR2 intra-frequency NR case for UE configured with relaxed measurement criterion

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **revised to R4-2017140**.

**R4-2017140 Test case for cell reselection to FR2 intra-frequency NR case for UE configured with relaxed measurement**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015484)

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **endorsed**.

**R4-2016065 Draft CR on Cell reselection Tests for UE configured with relaxed measurement criterion**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm Incorporated*

**Abstract:**

No Cell Reselection tests are specified for UE configured with relaxed measurement criterion

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **revised to R4-2017141**.

**R4-2017141 Draft CR on Cell reselection Tests for UE configured with relaxed measurement criterion**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm Incorporated*

(Replaces R4-2016065)

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **endorsed**.

**R4-2016148 Cell reselection to FR2 inter-frequency NR case under power saving**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1361 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Inter-frequency cell reselection requirements were relaxed for UEs operating under power saving. However, test case is missing to verify the new requirements.

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **revised to R4-2017142**.

**R4-2017142 Cell reselection to FR2 inter-frequency NR case under power saving**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1361 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016148)

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **revised to R4-2017353**.

**R4-2017353 Cell reselection to FR2 inter-frequency NR case under power saving**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1361 rev 2 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2017142)

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **endorsed**.

**R4-2016149 Discussions on testing cell reselection to FR2 inter-frequency NR case**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the methods for testing the requirements for cell reselection to a FR2 inter-frequency NR case.

**Discussion:**

See email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM in R4-2017011.

**Decision:** The document was **noted**.

#### 7.6.3 Demodulation and CSI requirements (38.101-4) [NR\_UE\_pow\_sav-Perf]

**R4-2017419 Email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod**

*Type: other For: discussion  
 Source: Moderator (CATT)*

**Discussion:**

The contribution summarized email discussion thread [97e][321] NR\_UE\_pow\_sav\_Demod. The email thread was moderated by Yuexia Song (CATT) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017619**.

**R4-2017619 Email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod**

*Type: other For: discussion  
 Source: Moderator (CATT)*

(Replaces R4-2017419)

**Discussion:**

The contribution summarized email discussion thread [97e][321] NR\_UE\_pow\_sav\_Demod. The email thread was moderated by Yuexia Song (CATT) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017494 WF on power saving demodulation**

*Type: other For: discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod in R4-2017419.

**Decision:** The document was **revised to R4-2017677**.

**R4-2017677 WF on power saving demodulation**

*Type: other For: discussion  
 Source: CMCC*

(Replaces R4-2017494)

**Discussion:**

See email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod in R4-2017419.

**Decision:** The document was **approved**.

|  |
| --- |
| **GTW Session 11.6th**  **Sub-topic#1-1-1 : Test set-up**  **Issue 1-1-1: Which test metric do you prefer to be used for PDCCH-WUS/PDCCH test?**  During the first round discussion, companies showed their views on Option 1 and Option 2. There is a clear majority support to move forward with Option 1 to complete this WI.  Option 1: CATT, Intel, MediaTek, Apple, vivo, CMCC, Qualcomm   * + 1a: Compared to PDCCH demodulation requirement, SNR remains unchanged, and the Pm-dsg\_total=1.099%   + 1b: Pm-dsg\_total=1%, and add little margin to SNR comparing to the PDCCH demodulation requirement.   + 1c: Pm-dsg\_total=1%   Option 2: Huawei  Among the companies supporting option 1, there is a clear majority support to move forward with option 1c in terms of the test metric.  Huawei: we agreed to verify PDCCH-WUS, we think option2 still feasible to verify PDCCH-WUS with 0.1%.  We think it’s 4 times compared to URRLC test cases, we think it’s feasible.  For comprise, we can accept to go with 1% test metric meanwhile we would like to verify some specific design with multiple search space in test set-up.  From RAN1 aspect, PDCCH WUS can be configured with larger payload size.  Option 1 with 2 search space configured.  Agreement:  Option 1c: Pm-dsg\_total=1%  Payload size and search spaceconfiguration for PDCCH-WUS: FFS pending on 2nd round discussion  QC: We have different understanding on PDCCH-WUS usage, with configured PDCCH-WUS, not meaning UE should always be wake-up.  CMCC: We think large payload size is not typical scenario in NW.  MTK: 2 search spaces is UE implementation, also wondering the usage scenario using multiple search space considering power consumption issue.  Intel: With PDCCH-WUS should be configured under typical scenarios which means PDCCH-WUS performance should be roust compared to normal PDCCH performance.  Huawei: Payload size under PDCCH-WUS larger than PDCCH is more typical scenario.  QC: with 2~3 search spaces, 1 time or several times over multiple search space?  MTK: It’s not defined in specification clearly for UE implementation with multiple search space. It’s up to gNB scheduling.  Huawei: Yes, PDCCH-WUS transmitted several times over multi-search spaces. UE need to follow gNB scheduling.  QC: The Purpose of multiple search space in RAN1 just allows NW flexibility not reliable transmission with repetition transmission. It’s purely UE implementation for PDCCH-WUS decoding.  MTK: Similar view QC.  Huawei: we have different understanding of major purpose RAN1 introducing multi-search space. |

**R4-2014215 Discussion on PDCCH-WUS/PDCCG test**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod in R4-2017419.

**Decision:** The document was **noted**.

**R4-2014411 Discussion on power saving demodulation test**

*Type: discussion For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod in R4-2017419.

**Decision:** The document was **noted**.

**R4-2014412 CR for TS38.101-4, test for PDCCH DCI format 2\_6 demodulation**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0086 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

Demodulation performance requirement for PDCCH DCI formant 2\_6 needs to be defined.

**Discussion:**

See email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod in R4-2017419.

**Decision:** The document was **not pursued**.

**R4-2014454 Work plan for power saving demodulation**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod in R4-2017419.

**Decision:** The document was **revised to R4-2017659**.

**R4-2017659 Work plan for power saving demodulation**

*Type: other For: Approval  
 Source: CATT*

(Replaces R4-2014454)

**Discussion:**

See email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod in R4-2017419.

**Decision:** The document was **approved**.

**R4-2014529 Discussion on DCP test cases for R16 UE power saving**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod in R4-2017419.

**Decision:** The document was **noted**.

**R4-2014540 Discussion on PDCCH-WUS requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod in R4-2017419.

**Decision:** The document was **noted**.

**R4-2014727 Demodulation on UE power saving**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod in R4-2017419.

**Decision:** The document was **noted**.

**R4-2015127 Discussion on performance requirements for PDCCH-WUS**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod in R4-2017419.

**Decision:** The document was **noted**.

**R4-2015595 Discussion on the performance requirements for NR power saving**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod in R4-2017419.

**Decision:** The document was **noted**.

### 7.7 NR Positioning Support [NR\_pos]

#### 7.7.1 General [NR\_pos-Core/Perf]

#### 7.7.2 RRM core requirements maintenance (38.133) [NR\_pos-Core]

**R4-2017012 Email discussion summary for [97e][213] NR\_pos\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][213] NR\_pos\_RRM\_1. The email thread was moderated by Li Zhang (Huawei) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017283**.

**R4-2017283 Email discussion summary for [97e][213] NR\_pos\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2017012)

**Discussion:**

The contribution summarized email discussion thread [97e][213] NR\_pos\_RRM\_1. The email thread was moderated by Li Zhang (Huawei) and treated during RRM session chaired by Andrey Chervyakov (Intel).

GTW session (November 05, 2020)

Sub-topic 4-7 UE capability for additional measurement gap patterns for PRS measurements

Agreement: Add a new feature to the RAN4 NR UE feature list

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Features | Index | Feature group | Components | Prerequisite feature groups | Need for the gNB to know if the feature is supported | Applicable to the capability signalling exchange between UEs (V2X WI only)”. | **Consequence if the feature is not supported by the UE** | **Type**  **(the ‘type’ definition from UE features should be based on the granularity of 1) Per UE or 2) Per Band or 3) Per BC or 4) Per FS or 5) Per FSPC)** | Need of FDD/TDD differentiation | Need of FR1/FR2 differentiation | Capability interpretation for mixture of FDD/TDD and/or FR1/FR2 | Note | Mandatory/Optional |
| 11. NR Positioning | 11-1 | Additional measurement gap patterns for PRS measurements | 1. MG pattern with MGL=10 ms, MGRP=80 ms for PRS measurements 2. MG pattern with MGL=20 ms, MGRP=160 ms for PRS measurements | RAN1 feature list: 13-1 Common DL PRS Processing Capability | Yes | N/A | The network cannot configure additional MG patterns for PRS measurements | Per UE | No | No | N/A | New MG patterns are applicable for PRS and NR/LTE RRM measurements i.e. new gaps are not shared between PRS and 2G/3G RRM measurements.  The new measurement gap patterns can be requested by the UE for FDD and TDD NR positioning measurements.  The new measurement gap patterns can be requested by the UE and configured by the network only when the UE is configured via LPP with NR positioning measurements requiring such gaps and can only be used during the corresponding positioning measurement period. | Optional with capability signalling |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

Sub-topic 1-5 Measurement period of multiple PRS layers – overlapping case (related to 4-4)

* Option 1 (existing requirement): Measurement period of multiple PRS layers is defined as summation of the measurement period in each frequency layer
* Option 2 (Ericsson): CSSF is the NR concept which is used for all types of measurements including RRM, scaling based on the number of frequency layers is the LTE concept. Hence, for the gap sharing case, CSSF shall be used in the requirements, but Σ over frequency layers shall be replaced with the max operator:

TRSTD, Total = maxi (TRSTD,i).

Discussion:

E///: the legacy CSSF concept relies on multiple frequency layers. The proposed concept is very different. We should follow the existing concept. For the existing CSSF concept we have problems with current equation.

Intel: we already discussed in the last meeting. We need to take into account UE processing capabilities and this is the reason to use different approach.

HW: we agree with E/// that the concept is different. However, not all measurement opportunities can be used due to UE processing capabilities and legacy approach does not work.

E///: we can use legacy CSSF concept and add a clarification on what happens when the processing capability is exceeded.

QC: Do not agree with E/// proposal. When the processing capability is not exceeded it is possible that Max() approach also works. Also, using the max(TRSTD) means that all layers should use the same MG.

HW: Do not agree with E///. In case we define requirements based on UE processing capabilities, then the spec will become very complex.

HW: Option 1 for topic 1-5 and 4-4 will cover the E/// proposal + extend to additional cases.

E///: this contradicts to the existing concept.

Agreement:

* Measurement period of multiple PRS layers – overlapping case
* Option 1 (HW, Intel, QC):
  + Measurement period of multiple PRS layers is defined as summation of the measurement period in each frequency layer
  + CSSF is only for the MG sharing between PRS and RRM layers. Count only a single PRS layer for a gap occasion in CSSF calculation for both PRS and RRM layers.
* Option 2 (E///):
  + CSSF is the NR concept which is used for all types of measurements including RRM, scaling based on the number of frequency layers is the LTE concept. Hence, for the gap sharing case, CSSF shall be used in the requirements, but Σ over frequency layers shall be replaced with the max operator:

TRSTD, Total = maxi (TRSTD,i).

* + Number of PRS layers to be counted in CSSF calculation is the number of frequency layers for PRS-based positioning measurements

Sub-topic 4-4 Number of PRS layers to be counted in CSSF calculation (related to 1-5)

* Option 1 (HW): CSSF is only for the MG sharing between PRS and RRM layers. Count only a single PRS layer for a gap occasion in CSSF calculation for both PRS and RRM layers.
* Option 2 (Ericsson): frequency layers for PRS-based positioning measurements

Sub-topic 1-3 Measurement period extension due to SSB collision

* Option 1 (CATT, Intel, HW, QC, OPPO): RSTD measurement period to be defined for cases when PRS samples are not dropped.
* Option 2 (OPPO): The same measurement period requirement shall be met, regardless of whether some the PRS symbols are dropped or not during this measurement period
* Option 3 (Ericsson): RAN4 decides among the following options for the dropped PRS (which are allowed according to RAN1):
  + - Option a: UE extends the RSTD measurement period in a specified way, based on the number of dropped PRS.
    - Option b: UE is allowed to extend the RSTD measurement period (clarified in the requirements) if more than N PRS are dropped, but the exact value is not specified.
    - Option c: The RSTD requirements apply, regardless of how many PRS are dropped.

Agreement:

Existing RSTD measurement period is defined for cases when PRS samples are not dropped.

UE is allowed to extend the RSTD measurement period if one or more PRS samples are dropped due to SSB collision, but the exact value is not specified.

Sub-topic 1-4 Measurement period when configured with PRS-RSRP

* Option 1 (CATT, Intel, HW, QC): RSTD measurement period shall not be impacted by PRS-RSRP measurement.
* Option 2 (Ericsson): When RSTD is configured together with PRS-RSRP and the required PRS-RSRP measurement period is longer than that for RSTD (configured without RSTD), then the RSTD measurement continues over the entire PRS-RSRP measurement period

Discussion:

HW: it is related to 2-2. Wonder when such situations can happen if both RSRP and RSTD use 4 samples.

E///: this is related to measurement period. This is related how CSSF is calculated. It can happen that RSTD is measured on multiple layers and RSRP is measured on a single layer. Our proposal is not to change the requirement but to clarify UE behavior.

QC: what is the situation being considered? Is UE doing TDOA with RSRP as a secondary measurement or UE doing AOA/TDOA. These scenarios may need to be treated separately.

HW: Scenarios mentioned by QC are valid. Need to further check in the 2nd round

1st round email discussion conclusions

**Topic #2: PRS-RSRP measurement**

Sub-topic 2-1 Measurement period extension due to SSB collision

Agreement: Follow the same conclusion for RSTD (in sub-topic 1-3).

Sub-topic 2-3 Measurement period of multiple PRS layers – overlapping case

Agreement: Follow the same conclusion for RSTD (in sub-topic 1-5).

Sub-topic 2-4 Measurement period of multiple PRS layers – non-overlapping case

Agreement: Follow the same conclusion for RSTD (in sub-topic 1-6).

Sub-topic 2-5 Measurement reporting requirements for non-periodic reporting

Agreement: Remove the following editor note in clause 9.9.3.4.

*Editor’s note: the measurement reporting requirements for aperiodic reports are FFS.*

**Topic #3: UE Rx-Tx time difference measurement**

Sub-topic 3-1 Measurement period extension due to SSB collision

Agreement: Follow the same conclusion for RSTD (in sub-topic 1-3).

Sub-topic 3-2 Measurement period when configured with PRS-RSRP

Agreement: Follow the same conclusion for RSTD (in sub-topic 1-4).

Sub-topic 3-3 Measurement period of multiple PRS layers – overlapping case

Agreement: Follow the same conclusion for RSTD (in sub-topic 1-5).

Sub-topic 3-4 Measurement period of multiple PRS layers – non-overlapping case

Agreement: Follow the same conclusion for RSTD (in sub-topic 1-6).

Sub-topic 3-5 Measurement reporting requirements for non-periodic reporting

Agreement:

Follow the same conclusion for PRS-RSRP (in sub-topic 2-5).

Remove the following editor note in clause 9.9.4.4.

*Editor’s note: the measurement reporting requirements for aperiodic reports are FFS.*

**Topic #4: Other requirements**

Sub-topic 4-1 Framework in defining CSSF for RRM/PRS MG sharing

Tentative agreement: Define CSSF based on existing framework unless technical issues are identified.

GTW session (November 12, 2020)

Sub-topic 4-1 Framework in defining CSSF for RRM/PRS MG sharing

Agreement:

* Define CSSF based on the following principles unless technical issues are identified.
  + In case PRS measurement in the positioning frequency layer is considered as a long periodicity measurement, then the CSSF for this frequency layer is equal to one
    - Exact definition and criteria for long periodicity PRS measurements are FFS
  + Otherwise the positioning frequency layer would compete for MG with other gap-based RRM and/or PRS measurements from other frequency layers
    - Option 1: frequency layer would compete for MG with other gap-based RRM measurements
    - Option 2: frequency layer would compete for MG with other gap-based RRM and PRS measurements

Sub-topic 1-5 Measurement period of multiple PRS layers – overlapping case (related to 4-4)

Background: 1st round agreement:

* Measurement period of multiple PRS layers – overlapping case
* Option 1 (HW, Intel, QC, Nokia):
  + Measurement period of multiple PRS layers is defined as summation of the measurement period in each frequency layer
  + CSSF is only for the MG sharing between PRS and RRM layers. Count only a single PRS layer for a gap occasion in CSSF calculation for both PRS and RRM layers.
* Option 2 (E///):
  + CSSF is the NR concept which is used for all types of measurements including RRM, scaling based on the number of frequency layers is the LTE concept. Hence, for the gap sharing case, CSSF shall be used in the requirements, but Σ over frequency layers shall be replaced with the max operator:

TRSTD, Total = maxi (TRSTD,i).

* + Number of PRS layers to be counted in CSSF calculation is the number of frequency layers for PRS-based positioning measurements

Discussion:

Huawei, Intel, QC: prefer Option 1

Nokia: In terms of min requirements Option 1 is preferred. Condition and applicable scenarios for Option 2 need to be elaborated.

E///: Current requirements are wrong.

HW: for E/// example in the 2nd round both Options provide same values. In case of 2 PRS frequency layers Option 2 may not work.

Nokia: E/// proposal is trying to reduce measurement time.

Intel: Need to take into account UE capabilities and processing time.

Proposal:

* + Measurement period of multiple PRS layers – overlapping case
    - Measurement period of multiple PRS layers is defined as summation of the measurement period in each frequency layer
    - CSSF is only for the MG sharing between PRS and RRM layers. Count only a single PRS layer for a gap occasion in CSSF calculation for both PRS and RRM layers.

Comments on the proposal

* + Support: Huawei, Qualcomm, Intel, CATT
  + Object: Ericsson (sustained opposition)
  + Chair: Issue discussed for a long time. No consensus.

**Decision:** The document was **noted**.

**R4-2017143 WF on UE PRS measurement requirements**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **revised to R4-2017372**.

**R4-2017372 WF on UE PRS measurement requirements**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

(Replaces R4-2017143)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **approved**.

##### 7.7.2.1 PRS-RSTD measurement requirements [NR\_pos-Core]

**R4-2014004 Measurement period for PRS-RSTD**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **withdrawn**.

**R4-2014445 Discussion on PRS RSTD measurement requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2014573 Further discussion on NR PRS RSTD measurement report requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2014799 Further discussion on maintenance for RSTD measurement requirement**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2015750 Discussion on remaining issues for RSTD measurement requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2015751 CR to update RSTD measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1323 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The measurement period is FFS for the case when measurement gaps and processing time T do not have overlap between different positioning frequency layers

The definition of Lprs used in defining measurement period is not fully clear

The measurement period requirements cannot apply if PRS is dropeed due to collision with SSB, or a resource sampling exceeds UE capability

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **merged**.

**R4-2016390 On UE positioning measurements: RSTD**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On UE positioning measurements: RSTD

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2016391 UE positioning measurements: RSTD**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1375 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Incomplete requirements, incorrect references

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **revised to R4-2017144**.

**R4-2017144 UE positioning measurements: RSTD**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1375 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016391)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **revised to R4-2017384**.

**R4-2017384 UE positioning measurements: RSTD**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1375 rev 2 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2017144)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **agreed**.

**R4-2016507 PRS-RSTD measurement period requirements**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

This contribution addresses remaining issues related to PRS-RSTD measurement requirements.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2016558 Revision of PRS-RSTD measurement period requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1396 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Clarify some aspects of the PRS-RSTD measurement period definition.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **merged**.

##### 7.7.2.2 PRS-RSRP measurement requirements [NR\_pos-Core]

**R4-2014006 Requirements for PRS-RSRP measurements**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2014575 Discussion on UE RX-TX time difference measurement requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2015369 CR on PRS-RSRP report mapping**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1254 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

CR R4-2009129 was agreed in RAN4#95e meeting but not implemented in 38.133.

**Discussion:**

The secretary commented that the CR number 1254 is missing on the coversheet. See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **revised to R4-2017146**.

**R4-2017146 CR on PRS-RSRP report mapping**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1254 rev 1 Cat: B (Rel-16)  
  
 Source: CATT*

(Replaces R4-2015369)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **agreed**.

**R4-2015752 Discussison on remaining issues for PRS-RSRP measurement requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2015753 CR to update PRS-RSRP measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1324 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The measurement period is FFS for the case when measurement gaps and processing time T do not have overlap between different positioning frequency layers

The definition of Lprs used in defining measurement period is not fully clear

The reporting requirements for aperiodic reporting is FFS

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **revised to R4-2017145**.

**R4-2017145 CR to update PRS-RSRP measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1324 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015753)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **agreed**.

**R4-2016392 On UE positioning measurements: PRS-RSRP**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On UE positioning measurements: PRS-RSRP

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2016393 UE positioning measurements: PRS-RSRP**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1376 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Incomplete requirements, incorrect references

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **merged**.

**R4-2016557 Revision of PRS-RSRP measurement period requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1395 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Clarify some aspects of the PRS-RSRP measurement period definition.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **merged**.

##### 7.7.2.3 UE Rx-Tx time difference measurement requirements [NR\_pos-Core]

**R4-2014003 UE Rx-Tx measurements**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2014446 Discussion on UE Rx-Tx time difference measurement requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2015754 Discussison on remaining issues for UE Rx-Rx time difference measurement requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2015755 CR to update UE Rx-Tx time difference measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1325 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The measurement period is FFS for the case when measurement gaps and processing time T do not have overlap between different positioning frequency layers

The definition of Lprs used in defining measurement period is not fully clear

The reporting requirements for aperiodic reporting is FFS

There is an editor note related to UE processing capability N

Applicability related to SRS/PRS time/frequency relation is not missing.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **merged**.

**R4-2016394 On UE positioning measurements: UE Rx-Tx**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On UE positioning measurements: UE Rx-Tx

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2016395 UE positioning measurements: UE Rx-Tx**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1377 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Incomplete requirements, incorrect references

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **merged**.

**R4-2016508 UE Rx-Tx time difference measurement period requirements**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

This contribution addresses remaining issues related to UE Rx-Tx time difference measurement requirements.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2016559 Revision of UE Rx-Tx time difference measurement period requirements and applicability**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1397 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Specify applicability of UE Rx-Tx time difference measurement requirements when UL timing changes and clarify some aspects of the PRS-RSRP measurement period definition.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **merged**.

##### 7.7.2.4 Other requirements [NR\_pos-Core]

**R4-2014005 New gap patterns for PRS measurements**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2014282 LS on new per-UE MG for NR positioning**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

**Abstract:**

Two information points are missing in the last LS R4-2012285: (1)these two new MG patterns are applicable for PRS and NR/LTE RRM measurements, i.e. new gaps are not shared between PRS and 2G/3G RRM measurements.

(2)these two new MG patterns are defined as

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **approved**.

**R4-2015756 Discussion on remaining issues in CSSF for PRS measurement**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2015757 CR on CSSF for PRS measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1326 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

There are some remaining open issues in CSSF due to PRS measurement.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **merged**.

**R4-2015758 CR to introduce new measurement gap patterns for positioning in 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6977 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

New MG patterns have been introduced for positioning in 38.133. It is also agreed that the new MG patterns can be used for LTE measurement. The new patterns need to be also introduced in 36.133 because

1. The new MG patterns will impact the MG interruption on LTE serving cells in NE-DC

2. The new MG patterns will impact the LTE measurement, at least we need to define the effective measurement time as UE cannot search and measure for a duration of 9ms

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **revised to R4-2017148**.

**R4-2017148 CR to introduce new measurement gap patterns for positioning in 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6977 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015758)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **postponed**.

**R4-2016156 Refinements on CSSF within gap to include NR positioning measurements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1362 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

CR 0941 was agreed at RAN4 #96-e in R4-2012286 on the matter of gap sharing between RRM and NR positioning measurements. This contained open issues such as how to define long-periodicicity NR measurements for positioning, which do not enter the gap competition, for PRS periodicities ≤160 ms and left the NR measurement term open.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **revised to R4-2017150**.

**R4-2017150 Refinements on CSSF within gap to include NR positioning measurements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1362 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016156)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **postponed**.

**R4-2016505 General NR positioning measurement requirements**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

This contribution discusses residual issues related to general requirements for NR positioning measurements

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2016556 Revision of NR positioning measurement requirements applicability**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1394 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Specify applicability of NR positioning measurement requirements under various scenarios

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **postponed**.

**R4-2017149 Revision of NR positioning measurement requirements applicability**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1394 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **withdrawn**.

**R4-2014798 CR to TS 38.133 on measurement period requirements for PRS RSTD, PRS-RSRP and UE Rx-Tx(section 9.9)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **revised to R4-2016999**.

**R4-2016999 CR to TS 38.133 on measurement period requirements for PRS RSTD, PRS-RSRP and UE Rx-Tx(section 9.9)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

(Replaces R4-2014798)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **revised to R4-2017147**.

**R4-2017147 CR to TS 38.133 on measurement period requirements for PRS RSTD, PRS-RSRP and UE Rx-Tx(section 9.9)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

(Replaces R4-2016999)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

Chair: CR is technically endorsed. Bring official CR in RAN4 #98e

**Decision:** The document was **endorsed**.

**R4-2016396 On CSSF for positioning measurements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On CSSF for positioning measurements

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **noted**.

**R4-2016397 Correction to CSSF for positioning measurements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1378 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Incomplete requirements

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017012.

**Decision:** The document was **merged**.

#### 7.7.3 RRM perf. requirements (38.133) [NR\_pos-Perf]

**R4-2017013 Email discussion summary for [97e][214] NR\_pos\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (Intel Corporation)*

**Discussion:**

The contribution summarized email discussion thread [97e][214] NR\_pos\_RRM\_2. The email thread was moderated by Huang Rui (Intel) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017284**.

**R4-2017284 Email discussion summary for [97e][214] NR\_pos\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (Intel Corporation)*

(Replaces R4-2017013)

**Discussion:**

The contribution summarized email discussion thread [97e][214] NR\_pos\_RRM\_2. The email thread was moderated by Huang Rui (Intel) and treated during RRM session chaired by Andrey Chervyakov (Intel).

GTW session (November 05, 2020)

Sub-topic 1-1 Work plan of performance part

* Option 1 (Intel): the parallel discussions for the accuracy requirements and test cases are needed to meet RAN4 current target.
* Option 2 (Ericsson): For the test cases, the two-phases approach is needed.

Discussion:

E///: Accuracy and test cases should go in parallel. We can consider a phased approach for test cases based on the amount of work.

Sub-topic 2-1 SINR side condition for FR2

* Option 1 (QC, HW): -3dB for reference TRP and -10 dB for neighbor TRP
* Option 2 (CATT, Intel, Ericsson): -6dB for reference TRP and -13 dB for neighbor TRP

Discussion:

HW: can compromise to Option 2.

QC: the motivation for Option 1 is to have tighter requirements.

Intel: in the last meeting an issue on TDL-C and low SINR was raised. It is being addressed in this meeting separately.

QC: TDL-C issue was for FR1 and it is a different issue.

E///: requirements can be discussed separately. The side conditions are more related to the deployment characteristics.

Agreement:

SINR side condition for FR2

Reference TRP: -6dB

Neighbor TRP: -13dB

Sub-topic 2-2 Number of samples for accuracy requirements

* Option 1. (CATT, Huawei, Intel, Qualcomm): Single PRS sample which includes a number of PRS repetitions.
* Option 2 (Ericsson): The RSTD accuracy requirements shall apply for any DL-PRS-ResourceRepetitionFactor≥1 and any LPRS≥2 which is given by the higher-layer parameter dl-PRS-NumSymbols.

Moderator notes: the same conclusion can be applied for other measurements (e.g. PRS RSRP and UE Rx-Tx time difference)

Discussion:

E///: need to clarify the issue. The number of samples was already agreed.

Intel: this is about the definition of a single sample

QC: we discuss the basic measurement unit

E///: our intention that accuracy requirements shall be defined for no repetition case and for the case of multiple repetitions.

HW: we prefer to define the repetition as a side condition. For large BW we can define requirements without repetitions. For small BW we may need repetitions.

Agreements:

Define the requirements at least for the cases without repetition and multiple repetitions (within the slot and across the slots within one PRS period (i.e. TPRS)) can be considered for small BW

Sub-topic 2-9 How to define the accuracy requirements with the combinations of PRS BW and other parameters (e.g. comb size, repetition)

* Option 1 (Huawei). RAN4 to decide the combinations of PRS BW and repetitions for which the requirements are defined. The combinations that were used in the agreed simulation can be used as a starting point
* Option 1a (Qualcomm) Accuracy requirements would be specified as a function of PRS bandwidth and the total number of comb pattern repetitions contained in one PRS sample.
* Option 1b (Intel) Accuracy requirements should be defined at least regarding to PRS bandwidth and the number of comb size.
* Option 2 (Ericsson): The RSTD accuracy requirements shall apply for any DL-PRS-ResourceRepetitionFactor≥1 and any LPRS≥2 which is given by the higher-layer parameter dl-PRS-NumSymbols. On BW dependency*:*

**Table 1: RSTD accuracy in FR1**

|  |  |
| --- | --- |
| **Accuracy [Tc]** | **PRS BW [PRB]** |
| ±90 | TBD ≤ BW ≤ 48 |
| ±50 | 48 < BW≤ 132 |
| ±35 | BW >132 |

**Table 2: RSTD accuracy in FR2**

|  |  |
| --- | --- |
| **Accuracy [Tc]** | **PRS BW [PRB]** |
| ±80 | TBD ≤ BW ≤ 32 |
| ±40 | 32 < BW≤ 64 |
| ±30 | BW >64 |

Moderator notes: 2-9 cover the issues of 2-3,2-4, 2-10. the same conclusion can be applied for other measurements (e.g. PRS RSRP and UE Rx-Tx time difference)

Discussion

Chair: further fill in the tables in this meeting for RSTD accuracy for further analysis

**Table 1: RSTD accuracy in FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Accuracy [Tc]** | **PRS BW, MHz (or PRBs)** | **SCS, kHz** | **Repetition factor** | **Comb size** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**Table 2: RSTD accuracy in FR2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Accuracy [Tc]** | **PRS BW, MHz (or PRBs)** | **SCS, kHz** | **Repetition factor** | **Comb size** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Sub-topic 5-2 Test cases for the different deployment scenarios

* Option 1 (Intel, Huawei): Only need to define the test cases for SA
* Option 2 (Ericsson). RAN4 will develop at least the following test cases for NR PRS-based positioning measurements in Rel-16:
  + *SA (FR1 and FR2) without CA,*
  + *NR-DC with FR1 PCell*

Discussion:

E///: Requirements cover also CA and NE-DC scenarios. As a compromise we can consider NR-DC as well.

HW: Do not understand why PRS measurement test cases should cover scenario which are not covered for all other RRM measurements. Do not see rationale behind Option 2.

E///: for NR-DC we aim to test positioning for both FR1 PCell and FR2 PSCell.

HW: why do we need FR2 PSCell. UE can do it even without PSCell?

Intel: based on RAN2 understanding the CA is not supported. In our understanding the requirements apply for PCell only.

Agreement:

Define test cases for

SA FR1 without CA

SA FR2 without CA

FFS: NR-DC with FR1 PCell and FR2 PSCell

1st round email discussion conclusions

**Topic #2: Measurement Accuracy Requirements for PRS RSTD**

2-11: Group delay calibration margin

Agreement:

Further decide on the group delay calibration margin.

Margin equals to zero if the reference and neighbouring resources are on the same frequency layer in FR1

**Topic #3: Measurement Accuracy Requirements for PRS RSRP**

3-2: Number of samples for PRS RSRP accuracy requirements

Agreement: Follow the same principle for that of RSTD measurement.

3-4: How to define the accuracy requirements with the combinations of PRS BW and repetitions

Agreement: Follow the same principle for that of RSTD measurement.

**Topic #4: Measurement Accuracy Requirements for UE Rx-Tx Time Difference**

4-2: Antenna panel assumption

Agreement: Follow the same conclusion as for RSTD requirements

4-3: Rx-Tx calibration error budget at UE and gNB

Agreement: Further decide on the margin to account for the group delay calibration error for both UE Rx and Tx. The margin for gNB can be FFS separately

4-5a: Applicability of accuracy requirements in the case of HO

Agreement: UE Rx-Tx time difference accuracy requirements do NOT apply with HO during the measurement period

**Topic #5: Test cases**

5-1: Test cases for the different positioning method

Agreement: No need to define separated E-CID test case in Rel16

5-2: Test cases for DRX

Agreement: NO DRX case will be tested only for NR positioning measurement requirements in Rel16

GTW session (November 12, 2020)

* Sub-topic #3-1 PRS RSRP SINR side condition for serving/neighbor TRP
  + Option 1a (Ericsson): -3dB for serving TRP
  + Option 1b (CATT): -6dB for serving TRP
  + Option 1c (Ericsson): defining two levels in side conditions for the target (no need to call “serving” or “neighbor”) measured PRS-RSRP: [-3 dB or -6 dB] and [-13 dB].
  + Option 2 (Intel, Huawei, ZTE, OPPO): for neighbor cell/TRPs ONLY
  + Option 3 (Qualcomm, Intel, OPPO): For the reference cell/TRPs and neighbour cell/TRPs
    - Same as that for the reference cell in PRS-RSTD

Discussion

E///: Prefer to define 2 levels

Huawei: can compromise to Option 1c

QC: ok with Option 1c

Intel: shall we define different requirements for two side conditions?

E///: yes.

Agreement:

PRS RSRP: Define measurement accuracy requirements for 2 SINR side conditions

* Side condition #1: [-3dB or -6dB]
* Side condition #2: [-13dB]
* No differentiation between serving and neighboring cell/TRPs
* Same side conditions apply for FR1 and FR2
* Sub-topic #3-3 Type of PRS RSRP accuracy requirements *:FFS*
  + Option 1 (Intel, Huawei, Qualcomm, ZTE). Define ONLY relative accuracy requirements for PRS-RSRP
  + Option 2 (Intel, Huawei, ZTE). Define both absolute and relative accuracy requirements for PRS-RSRP
  + Option 3 (Ericsson).
    - At least the absolute accuracy requirements for PRS-RSRP are defined
    - FFS the need to define relative accuracy requirements for PRS-RSRP

Agreement: Define both absolute and relative accuracy requirements for PRS-RSRP

* Sub-topic#4-1 whether need to define separate measurement accuracy requirements for serving and neighbor cells
  + Option 1: Yes (Ericsson)
    - In addition to -13 dB, also a higher side condition (e.g., -3 dB) is defined for UE Rx-Tx measurements, for both FR1 and FR2
  + Option 2: No (Qualcomm, Huawei, Intel, CATT)

Agreement:

UE Rx-Tx time difference: Define measurement accuracy requirements for 2 SINR side conditions

* Side condition #1: [-3dB or -6dB]
* Side condition #2: [-13dB]
* No differentiation between serving and neighboring cell/TRPs
* Same side conditions apply for FR1 and FR2
* FFS whether the test cases will cover both side conditions

**Decision:** The document was **noted**.

**R4-2017151 WF on UE PRS performance requirements**

*Type: other For: discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **revised to R4-2017371**.

**R4-2017371 WF on UE PRS performance requirements**

*Type: other For: discussion  
 Source: Intel Corporation*

(Replaces R4-2017151)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **approved**.

##### 7.7.3.1 General [NR\_pos-Perf]

**R4-2014571 Discussion on NR Positioning test cases configuration and list**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2014572 Draft CR to TS 38.133: PRS configurations for NR Pos RRM tests**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Intel Corporation*

**Abstract:**

There are no PRS configurations defined for RRM test cases.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **revised to R4-2017156**.

**R4-2017156 Draft CR to TS 38.133: PRS configurations for NR Pos RRM tests**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Intel Corporation*

(Replaces R4-2014572)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **postponed**.

**R4-2015567 Work plan for NR Positioning RRM Performance part**

*Type: discussion For: Approval  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **revised to R4-2017158**.

**R4-2017158 Work plan for NR Positioning RRM Performance part**

*Type: discussion For: Approval  
 Source: Intel Corporation*

(Replaces R4-2015567)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **approved**.

**R4-2016398 General discussion on NR RRM positioning test cases**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

General discussion on NR RRM positioning test cases

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2017373 Draft Big CR: Introduction of Rel-16 NR Positioning RRM performance requirements and test cases (TS 38.133)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Ericsson, Intel*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

##### 7.7.3.2 UE requirements and test cases [NR\_pos-Perf]

###### 7.7.3.2.1 Measurement accuracy requirements [NR\_pos-Perf]

7.7.3.2.1.1 PRS RSTD [NR\_pos-Perf]

**R4-2014447 Discussion on PRS RSTD accuracy requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2014450 CR on PRS RSTD accuracy requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1181 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

The performance requirements for RSTD measurement need to be specified.

**Discussion:**

The secretary commented that the CR number 1181 is missing on the coversheet. See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **merged**.

**R4-2014574 Discussion on NR PRS RSTD Measurement Accuracy Requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2015759 Discussion on accuracy requirements for RSTD measurement**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2015760 draftCR to introduce accuracy requirements for RSTD measurement**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

There is no accuracy requirements for RSTD measurement.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **revised to R4-2017153**.

**R4-2017153 draftCR to introduce accuracy requirements for RSTD measurement**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015760)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **endorsed**.

**R4-2016404 On RSTD measurement accuracy**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On RSTD measurement accuracy

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2016405 RSTD measurement accuracy**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1382 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

RSTD measurements accuracy requirements are missing

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **merged**.

**R4-2016510 PRS-RSTD measurement accuracy requirements**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

In this contribution we discuss open issues concerning PRS-RSTD measurement accuracy and propse accuracy requirements.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

7.7.3.2.1.2 PRS RSRP [NR\_pos-Perf]

**R4-2014007 Accuracy requirements for PRS-RSRP measurements**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2014448 Discussion on PRS RSRP accuracy requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2014451 CR on PRS-RSRP accuracy requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1182 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

The performance requirements for PRS-RSRP measurement need to be specified.

**Discussion:**

The secretary commented that the CR number 1182 is missing on the coversheet. See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **revised to R4-2017154**.

**R4-2017154 CR on PRS-RSRP accuracy requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1182 rev 1 Cat: B (Rel-16)  
  
 Source: CATT*

(Replaces R4-2014451)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **endorsed**.

**R4-2014578 Discussion on PRS RSRP accuracy requirements for NR Positioning**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2014579 Link-level simulation results for PRS RSRP measurement**

*Type: other For: Information  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2015761 Discussion on accuracy requirements for PRS-RSRP measurement**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2015762 draftCR to introduce accuracy requirements for PRS-RSRP measurement**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

There is no accuracy requirements for PRS-RSRP measurement.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **merged**.

**R4-2016402 On PRS-RSRP measurement accuracy**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On PRS-RSRP measurement accuracy

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2016403 PRS-RSRP measurement accuracy**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1381 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

PRS-RSRP measurements accuracy requirements are missing

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **merged**.

**R4-2016509 PRS-RSRP measurement accuracy requirements**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

In this contribution we discuss residual issues concerning PRS-RSRP measurement accuracy.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

7.7.3.2.1.3 UE Rx-Tx time difference [NR\_pos-Perf]

**R4-2014449 Discussion on UE Rx-Tx time difference accuracy requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2014452 CR on UE Rx-Tx time difference accuracy requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1183 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

The performance requirements for UE Rx-Tx time difference measurement need to be specified.

**Discussion:**

The secretary commented that the CR number 1183 is missing on the coversheet. See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **merged**.

**R4-2014576 Discussion on UE RX-TX time difference measurement accuracy requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2014577 Link-level simulation results for UE RX-TX time difference measurement**

*Type: other For: Information  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2015763 Discussion on accuracy requirements for UE Rx-Tx time difference measurement**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2015764 draftCR to introduce accuracy requirements for UE Rx-Tx time difference measurement**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

There is no accuracy requirements for UE Rx-Tx time difference measurement.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **merged**.

**R4-2016406 On UE Rx-Tx measurement accuracy**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On UE Rx-Tx measurement accuracy

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2016407 UE Rx-Tx measurement accuracy**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1383 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

UE Rx-Tx measurements accuracy requirements are missing

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **revised to R4-2017155**.

**R4-2017155 UE Rx-Tx measurement accuracy**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1383 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016407)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **endorsed**.

**R4-2016511 UE Rx-Tx time difference measurement accuracy requirements**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

In this contribution we discuss open issues concerning UE Rx-Tx time difference measurement accuracy and propse accuracy requirements.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

###### 7.7.3.2.2 Test cases [NR\_pos-Perf]

**R4-2015370 CR on conditions for NR RSTD measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1255 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

The conditions for NR RSTD measurement need to be defined when specifying the performance requirements for RSTD measurement in 38.133.

**Discussion:**

The secretary commented that the CR number 1255 is missing on the coversheet. See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **revised to R4-2017157**.

**R4-2017157 CR on conditions for NR RSTD measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1255 rev 1 Cat: B (Rel-16)  
  
 Source: CATT*

(Replaces R4-2015370)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **endorsed**.

**R4-2015765 Discussion on RRM test case for UE positioning requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2015766 draftCR on PRS RMC for positioning test cases**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

RAN4 to define RRM test cases for positioning measurement, and a common RMC for PRS configuration is needed.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **merged**.

**R4-2016399 NR RRM positioning test cases list and time plan**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

NR RRM positioning test cases list and time plan

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **noted**.

**R4-2016400 NR RRM positioning test cases structure**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1379 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

No specification structure for NR positioning test cases

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **revised to R4-2017152**.

**R4-2017152 NR RRM positioning test cases structure**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1379 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016400)

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **endorsed**.

###### 7.7.3.2.3 Other [NR\_pos-Perf]

**R4-2016401 Correction to UE Rx-Tx measurement report mapping**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1380 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The parameter k used in the gNB timing measurement report mapping is corrected.

**Discussion:**

See email discussion summary for [97e][213] NR\_pos\_RRM\_1 in R4-2017013.

**Decision:** The document was **endorsed**.

##### 7.7.3.3 gNB requirements [NR\_pos-Perf]

**R4-2017014 Email discussion summary for [97e][215] NR\_pos\_RRM\_3**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][215] NR\_pos\_RRM\_3. The email thread was moderated by Muhammad Kazmi (Ericsson) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017285**.

**R4-2017285 Email discussion summary for [97e][215] NR\_pos\_RRM\_3**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2017014)

**Discussion:**

The contribution summarized email discussion thread [97e][215] NR\_pos\_RRM\_3. The email thread was moderated by Muhammad Kazmi (Ericsson) and treated during RRM session chaired by Andrey Chervyakov (Intel).

GTW session (November 05, 2020)

Issue 1-1-1: Selection of option for gNB measurement accuracy requirements

Option 1: E///, Nokia

* + Define accuracy for SRS-RSRP and gNB Rx-Tx time difference

Option 2: CATT, HW, CMCC

* + Define accuracy for SRS-RSRP, gNB Rx-Tx time difference and UL RTOA

Discussion:

HW: UL RTOA is the only UL measurement which can enable the UL-based positioning. Clear interest from vendors and operators.

E///: RTOA procedure is applicable only for the case of precise synch among the BSs. RTOA requires a lot of time and simulation efforts in RAN4.

Nokia: Same view as E///. UL RTOA has drawbacks comparing to other methods incl. synchronization and increased UE power consumption. Multi-RTT has some benefits. We see one operator involved in the discussion.

Intel: slightly prefer Option 2 in case the UL RTOA requirements can reuse the gNB Rx-Tx.

QC: ok with either Option. Slight preference for Option 2.

HW: to E/// for synch we are defining the measurement requirements which does not mandate any gNB synchronization. For example DL methods also require tight synchronization but it does not mean we need to remove those. We can reuse the gNB Rx-Tx time different requirements.

HW: to Nokia we should not discuss different positioning methods and should simply enable the requirements for all method so that vendors and operators can decide which one to use. Requirements are suggested to be defined based on Rel-16 SRS.

E///: do not think we can reuse the gNB Rx-Tx requirements.

Nokia: agree with E/// statement. We have concern on non-guaranteed transmission which is planned to be addressed in Rel-17.

Huawei: to E/// what really matters is Es/Iot for the measurement accuracy. For non-guaranteed transmission the issue applies to gNB Rx-Tx as well.

Agreement:

Define measurement accuracy requirements for

SRS-RSRP

gNB Rx-Tx time difference

FFS: UL RTOA

Further investigate whether the accuracy requirements for gNB Rx-Tx can be reused. If there are no technical issues to reuse gNB Rx-Tx time difference requirements, then the UL RTOA requirements will be defined.

Further study the impact from non-guaranteed SRS transmission for different methods

Issue 1-2-1: Optionality of gNB measurement accuracy requirements

Option 1: QC, CATT, ZTE, HW

* + Mandatory for gNB to meet accuracy for supported positioning measurement

Option 2: E///, Nokia

* + gNB shall meet accuracy requirements for supported positioning measurement as declared by the manufacturer

Discussion:

E///: The BS hardware is fixed. It is much better to give a recommendation rather than a requirement.

Nokia: Same view as E///. It cannot be mandated that gNB support each and every combination of parameters (e.g. BW, supported SRS configurations, etc).

Agreement:

gNB shall meet accuracy requirements for supported positioning measurement for the test configurations (e.g. CBW, SRS configurations, etc) declared by the manufacturer

Issue 1-3-1: Side conditions (e.g. SINR) for applicability of accuracy

Option 1: CATT, QC

One set of side conditions to meet accuracy for UE in serving as well as in neighbour cells

Option 2: ZTE, HW, E///, Nokia

Accuracy is defined for two different side conditions (two sets of Es/Iot).

Agreement: Accuracy is defined for two different side conditions (two sets of Es/Iot)

High SNR side condition (Es/Iot1) which corresponds to for example typical serving cell conditions or low interference neighbor cell conditions

Low SNR side condition (Es/Iot2) which corresponds to for example typical neighbor cell conditions

Issue 1-3-2: If two conditions are used for applicability of accuracy then whether they depend on cell type?

Option 1: ZTE, Nokia, E///

One side condition is to meet accuracy for UE in serving and another one for UE in neighbour cells

Option 2: HW, QC

The two sets of Es/Iot conditions are agnostic to cell type

1st round email discussion conclusions

**Topic #1: gNB requirements**

Issue 1-3-3: How to derive side conditions (e.g. SINR)

Agreements: Based on system simulations. Note: as agreed in issue 1-3-1 there will be two different side conditions: low Es/Iot and high Es/Iot values.

**Decision:** The document was **noted**.

**R4-2017159 WF on gNB positioning measurement requirements**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **approved**.

**R4-2017160 Updated system simulation assumptions on gNB positioning measurement for deriving side conditions**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **revised to R4-2017370**.

**R4-2017370 Updated system simulation assumptions on gNB positioning measurement for deriving side conditions**

*Type: other For: discussion  
 Source: Ericsson*

(Replaces R4-2017160)

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **revised to R4-2017385**.

**R4-2017385 Updated system simulation assumptions on gNB positioning measurement for deriving side conditions**

*Type: other For: discussion  
 Source: Ericsson*

(Replaces R4-2017370)

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **approved**.

**R4-2014002 gNB requirements for NR positioning**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

This paper discusses some pending issues left from last meeting

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **noted**.

**R4-2014453 Discussion on gNB measurement requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **noted**.

**R4-2015767 Discussion on the scope gNB requirements for NR positioning**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon, CMCC*

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **noted**.

**R4-2015768 Discussion on gNB positioning measurement requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **noted**.

**R4-2015769 System and link level simulation results for gNB measurement requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **noted**.

**R4-2015770 draftCR to introduce accuracy requirements for gNB positioning measurement**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

There is no accuracy requirements for gNB positioning measurement.

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **postponed**.

**R4-2016062 gNB timing positioning measurement report mapping update for k**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1358 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The parameter k used in the gNB timing measurement report mapping is corrected.

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **revised to R4-2017161**.

**R4-2017161 gNB timing positioning measurement report mapping update for k**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1358 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016062)

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **agreed**.

**R4-2016088 gNB Positioning Requirements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on WF from the last meeting and a proposal to split the requirements.

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **noted**.

**R4-2016109 gNB Positioning UL SRS System Simulation Results**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Simulation results according to agreed assumptions.

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **noted**.

**R4-2016154 gNB Positioning UL SRS Link Level Simulation Results**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Simulation results according to agreed assumptions

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **noted**.

**R4-2016157 On gNB measurement accuracy requirements for NR positioning**

*Type: discussion For: Agreement  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on gNB measurement accuracy requirements for NR positioning.

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **noted**.

**R4-2016158 System simulation results for SRS for NR positioning**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Partial system simulation results for SRS for NR positioning.

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **noted**.

**R4-2016159 System simulation results for SRS for NR positioning**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Updated system simulation results for SRS for NR positioning.

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **noted**.

**R4-2016506 gNB requirements for positioning**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

This contribution discusses remaining issues about gNB requirements for NR positioning

**Discussion:**

See email discussion summary for [97e][215] NR\_pos\_RRM\_3 in R4-2017014.

**Decision:** The document was **noted**.

### 7.8 Physical layer enhancements for NR URLLC [NR\_L1enh\_URLLC-Core]

#### 7.8.1 Demodulation and CSI requirements (38.101-4/38.104) [NR\_L1enh\_URLLC-Perf]

|  |
| --- |
| **GTW Session 11.5th**  **Topics from email thread [322]**  **Issue 2-1-1: Use of early pass/fail**   * Proposals   + Option 1: Use early pass/fail criteria for CQI test (Huawei, Ericsson, Apple, Intel)   + Option 2: Do not use early pass/fail criteria * Recommended WF   + Agree option 1   Agreement: Use early pass/fail criteria for CQI test  **Issue 2-1-2: Include X (0.5dB) in CQI test**   * Proposals   + Option 1:Yes (Qualcomm)   + Option 2: No (Ericsson, Apple, Huawei, Intel) * Recommended WF   + Discuss in GTW   QC: Other companies concern on X delta may bring wrong CQI reporting which lead UE fain in the test, but we observed the SNR gap is big enough.  Apple: CQI test use two test points to verify CQI reporting, +0.5 dB margin has no significant impact on test time reduction, and impact the test purpose of CQI.  E///: Even SNR gap among CQI is >0.5dB, but in test cases, we may still have UE the SNR levels close the CQI boundary.  Huawei: we share similar view as E///. The delta of 0.5dB may bring UE fain in the test; we think confidence level reduction can achieve the test purpose for time reduction.  Intel: X delta dB we are not sure bring the benefit on time reduction since the test procedure is different compared to FMCS test cases.  QC: We think the approach among Fixe MCS and CQI would be similar. The gap is pretty high i.e. 1.5dB among SNR between adjacent CQI level. We think confidence level is very important and essential.  E///: we didn’t see the need to test under very high confidence level. The purpose is to verify UE using CQI table 3. For NW side, the CQI reporting should match the exact SNR setting. We have concern on the delta on CQI test cases.  Apple: Test procedure is different among Fixed MCS test cases and CQI test cases not clear using delta X can bring benefits from test time reduction. We don’t think we need to introduce test applicable rules among CQI test cases and Fixed MCS test cases.  QC: eMBB can enable OLLA for CQI adjusting, for URLLC CQI test case is critical. If UE following CQI criteria, gap should be enough.  Apple: We can’t align UE assumption for CQI and SNR mapping table which up to UE implementation and that’s the reason we have 1dB offset with 2 test points in the spec for CQI.  QC: We intended to choose middle point in SNR level. We can take some margin considering implementation difference.  Ex. Test Level as 3dB  UE 1: SNR 1.5dB for CQI X, SNR 3.4dB for CQI X+1  UE2: SNR 2dB for CQI X, 4 dB for CQI X+1  What will be happen with 3dB +X (0.5dB), for such of UE1 and UE2?  Question 1: Do we need to align UE assumption for CQI and SNR mapping?  Candidate options for further discussion in this meeting:  Op1: 98.6% Confidence level with X = 0 dB  Op2: 99% Confidence level with X = 0 dB  Op3: 99.999% Confidence level with X = [0.5] dB  Op4: NO test cases for CQI table 3 with ultra-BLER  We will comeback in 2nd week to make agreements based on majority supporting among these options.  **Issue 2-1-3: Confidence level**   * Proposals   + Option 1: 99.999% (Qualcomm)   + Option 2: 99% (Ericsson)   + Option 3: 98.6% (Ericsson, Apple, Huawei, Intel)   + Option 4: 95% (Ericsson, Apple, Huawei, Intel)   + (Other options not precluded) * Recommended WF   + Discuss in GTW   **Issue 2-1-4: Lower bound for median CQI**   * Proposals   + Option 1: Define a lower bound for median CQI (Qualcomm, Ericsson, Apple, Huawei)   + Option 2: No lower bound (Intel) * Recommended WF   + Discuss in GTW   E///: The low bound was to ensure no CQI 0 reporting during the test.  Further discuss the SNR test points to see if any lower bound needs to be defined.  **Topics from email thread [323]**  Sub-topic 2-3: UE demodulation requirements for pre-emption  **Issue 2-3-1: Simulation results observation (based on R4-2015628):**  The gain between with and without buffer flushing is  MCS13 with 20% probability:   * About 0.5 dB (Ericsson, Huawei, MTK) * More than 2.5 dB (Intel, Apple)   MCS13 with 10% probability:   * Less than 0.5 dB (Ericsson, Huawei, MTK, Intel) * More than 1 dB (Apple)   MCS4 with 20% probability:   * Less than 0.1 dB (Ericsson, Huawei, MTK, Intel, Apple)   MCS4 with 10% probability:   * Less than 0.03 dB (Ericsson, Huawei, MTK, Intel, Apple) * More than 1 dB (QC) * Recommended WF   + QC: Please double check your simulation results as it seems there is larger span between yours and others’ results.   + Please update your results if necessary.   **Issue 2-3-2: Test metric:**   * Proposals   + Option 1: 70% maximum throughput with gain larger than 1dB. (Huawei, Apple, Ericsson)   + Option 2: 1% or 10% BLER for scenarios with 2 re-transmissions. (Intel)   + Option 3: 1% BLER or 70% maximum throughput for scenarios with 4 re-transmissions. (Intel)   + Option 4: 70% maximum throughput (MTK) * Recommended WF   + The main intention for this case is to find the performance difference between with and without buffer flushing. So the test metric should be defined based on this intention. By considering the limited time left, the moderator does not recommend to change the test metric but to define the agreed test metric (70% maximum throughput) with gain larger than 1dB. Based on the current simulation results, there is a large span between companies and the gain between with and without buffer flushing is fairly small. To achieve gain larger than 1dB, one suggestion is to increase the MCS value. E.g. MCS16 or higher. Please update your simulation results if new results are available. (Huawei, Intel)     - QC: Gain should not very across MCS.   **Issue 2-3-3: MCS**   * Proposals   + Option 1: MCS16 from Table 1. (Huawei)   + Option 2: MCS13 from Table 1 (Apple, Ericsson, Intel)   + Option 3: MCS 4 from Table 1 (QC) * Recommended WF   + TBD   **Issue 2-3-4: Pre-emption probability**   * Proposals   + Option 1: 20%. (Huawei, Apple, Intel in case of 4 re-transmissions)   + Option 2: 10% (Ericsson, QC, Intel in case of 2 re-transmissions and BLER test metric, MTK) * Recommended WF   + TBD   Select proper test parameters and test metric to discriminate UE behavior and ensure proper UE processing i.e. the performance gap > 1dB   * Companies are encouraged to bring simulation results for MCS 16, and MCS 17 for comparison purpose. * We will further check the results from companies to make decisions. * Continue to discuss the simulation assumption and align companies’ results.   QC: Changing MCS levels maybe not helpful for performance gap. We may need to consider other parameters.  We are open to try other options. We also need to align the simulation assumption details to align the results among companies.  Apple: MCS 16 have higher code rating, with improper processing the performance loss more obviously. We have some agreements on UE behaviour assumption.  E///: We need to clarify the gap means the average results from companies? In our simulation, we update the results we see >1 dB gap under MCS 16.  Intel: With high MCS with higher modulation order and coding rate, the performance gap will be increased. Also collect the results for average to align the results.  QC: Agree E///, we need to discuss what MCSs to be simulated. The quality of LLR under low MCS is worse than high MCS.  Sub-topic 3-1: Rel-16 URLLC UE features  **Issue 3-1-2: Whether to define performance requirements for PDCCH enhancement.**   * Proposals   + Option 1: Yes (Huawei, Ericsson)   + Option 2: No (Intel, Apple, QC) * Recommended WF   + TBD   **Issue 3-1-2a: Whether to define PDCCH performance requirements for DCI format 1\_2**   * Proposals   + Option 1: Yes (Ericsson, CTC)   + Option 2: No (Apple, QC, Huawei, MTK) * Recommended WF   + TBD   Huawei: just DCI size difference, no UE receiver processing difference, no need see from our side.  MTK: Same view as Huawei  Apple: Same view as Huawei  Intel: Similar view as Huawei  QC: Similar view as Huawei  China Telecomm: DCI size will impact the code rate and impact the receiver performance.  Agreement: no requirements for DCI format 1\_2.  **Issue 3-1-2b: Whether to define PDCCH performance requirements for covering multiple PDCCH monitoring occasions per slot.**   * Proposals   + Option 1: Yes   + Option 2: No (Ericsson, Apple) * Recommended WF   + TBD   Agreement: Not define PDCCH performance requirements for covering multiple PDCCH monitoring occasions per slot  Sub-topic 3-2: Release independent  **Issue 3-2-1: UE URLLC requirements for Rel-15 features release independent from Rel-15**   * Proposals   + Option 1: Yes (Huawei, QC, CTC, Intel)   + Option 2: No * Recommended WF   + Option 1   Agreement: UE URLLC requirements for Rel-15 features release independent from Rel-15  Sub-topic 6-1: Rel-16 URLLC BS features  **Issue 6-1-2: Whether to define performance requirements for PUSCH repetition type B**   * Proposals   + Option 1: Yes (Huawei, Intel, CTC)   + Option 2: No (Nokia, Samsung, Ericsson) * Recommended WF   + TBD   Nokia: what’s the timeline for this WI performance part?  Huawei: Current timeline is Dec, but we should focus on the technical discussion on this feature.  E///: We expect same performance compared to existing test cases, what’s the delta?  Nokia: We can further discuss this feature, but we are worry about the completion date and progress.  Intel: Mapping pattern is different and processing from receiver side is different compared to existing test cases even the performance can be similar.  Samsung: Compared to Type B, what’s the difference from baseband processing aspect?  China Telecomm: From receiver side, the processing is same. Meanwhile from operator side, we would like to check the operating scenario since the deployment scenarios are different.  This feature is Rel-16 feature introduced by Rel-16 URLLC feature and we see much Rel-16 WI performance need to be extended, we think time line not issue.  Huawei: The mapping can cause slot boundary, we didn’t cover such scenario for slot-cross.  Samsung: Fine to comprise for cover this new scenario but would like to further discuss the details of parameters.  We should prioritize the existing Rel-15 open issues.  Nokia: There are 3 cases each of them required new implementation which required further study.   * Postpone the decision in next RAN4 meeting, and till Dec 2020 focused on Rel-15 test cases open issues.   **Issue 6-1-3: Whether to define performance requirements for Inter-UE multiplexing**   * Proposals   + Option 1: Yes   + Option 2: No (Huawei, Intel, Nokia, Ericsson, Samsung, Nokia, CTC) * Recommended WF   + Do not define the performance requirement for inter-UE multiplexing as no demodulation impact is expected.   Agreement: Do not define the performance requirement for inter-UE multiplexing as no demodulation impact is expected.  Sub-topic 4-1: BS demodulation requirements of high reliability for FR1  **Issue 4-1-2: Whether to clarify the safety statement in specification**   * Proposals   + Option 1: No need to specify any safety statements in specification (Huawei, Samsung)   + Option 2: Yes     - Option 1a: Since the URLLC features of 5G NR will potentially be used in safety critical applications, the ultimately chosen statistical testing methodology for testing of these features must be verified by an independent body of experts/statisticians, before requirements and test can be used as basis for safety critical implementations. All statistical analysis and discussions provided in this meeting are to be taken as a best effort and is not to be taken as due diligence     - Option 1b: (Ericsson)       * If the URLLC features of 5G NR would be used in safety or mission critical applications, the ultimately chosen statistical testing methodology for testing of these features must be verified by an independent body of experts/statisticians. It is also important to bear in mind that the demodulation requirements do not take account of all aspects of system operation (for example RF, transmitter, internal interfaces, higher layer protocol software etc.). * Recommended WF   Agreement: capture following note in WF, not include into specification. ( no other companies show views on this topic till now except Huawei, Samsung, Nokia and E///).   * If the URLLC features of 5G NR would be used in safety or mission critical applications, the ultimately chosen statistical testing methodology for testing of these features must be verified by an independent body of experts/statisticians. It is also important to bear in mind that the demodulation requirements do not take account of all aspects of system operation (for example RF, transmitter, internal interfaces, higher layer protocol software etc.). |

##### 7.8.1.1 Performance requirements with ultra-low BLER [NR\_L1enh\_URLLC-Perf]

**R4-2017420 Email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][322] NR\_URLLC\_Demod\_Part1. The email thread was moderated by Thomas Chapman (Ericsson) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017620**.

**R4-2017620 Email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2017420)

**Discussion:**

The contribution summarized email discussion thread [97e][322] NR\_URLLC\_Demod\_Part1. The email thread was moderated by Thomas Chapman (Ericsson) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017507 WF on ultra-low BLER requirements**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017674**.

**R4-2017674 WF on ultra-low BLER requirements**

*Type: other For: discussion  
 Source: Ericsson*

(Replaces R4-2017507)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **agreed**.

**R4-2017508 LS to RAN5 on CQI reporting for URLLC**

*Type: LS out For: Approval  
 to -  
 Source: Qualcomm*

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **withdrawn**.

###### 7.8.1.1.1 UE demodulation requirements [NR\_L1enh\_URLLC-Perf]

**R4-2014241 UE demodulation requirements for Ultra low BLER**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **noted**.

**R4-2014541 Simulation results for Ultra-low BLER UE demodulation requirements**

*Type: other For: Information  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **noted**.

**R4-2015622 CR to TS 38.101-4: Applicability rules for URLLC UE demodulation requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0102 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For URLLC UE demodulation requirements, four new demodulation requirements are defined for FR1 and two for FR2. To clearly introduce new demodulation requirements in specification, applicability rules for these demodulation requirements should be clarified.

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017515**.

**R4-2017515 CR to TS 38.101-4: Applicability rules for URLLC UE demodulation requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0102 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015622)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **agreed**.

**R4-2015862 Summary of ideal and impairment results for ultra-low BLER UE**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

Moderator summary of simulation results

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017495**.

**R4-2017495 Summary of ideal and impairment results for ultra-low BLER UE**

*Type: other For: Information  
 Source: Ericsson*

(Replaces R4-2015862)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **noted**.

**R4-2016004 CR on FRC for UE Ultra-low BLER requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0109 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Definition of FR1 UE Ultra-low BLER demodulation requirements

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **agreed**.

**R4-2017496 CR on FRC for UE Ultra-low BLER requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0109 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **withdrawn**.

**R4-2016105 Simulation results on UE URLLC demodulation performance requirements for Ultra low BLER**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This paper provides our simulation results for URLLC Ultra low BLER requirements

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **noted**.

**R4-2016107 CR to TS 38.101-4: Performance requirements for URLLC PDSCH 0.001% BLER**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0112 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

New feature of PDSCH with 0.001% BLER were defined for URLLC. In order to test the performance of this new feature, a demodulation requirements are introduced as per RAN4 agreements.

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017497**.

**R4-2017497 CR to TS 38.101-4: Performance requirements for URLLC PDSCH 0.001% BLER**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0112 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016107)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **agreed**.

###### 7.8.1.1.2 CSI requirements [NR\_L1enh\_URLLC-Perf]

**R4-2014542 Discussion on CSI requirements for Ultra-low BLER**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **noted**.

**R4-2015615 Discussion on CSI requireements with ultra low-BLER**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Abstract:**

Discuss the open issues.

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **noted**.

**R4-2015621 CR to TS 38.101-4: Applicability rules for URLLC CSI requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0101 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

A new CQI table is designed for URLLC, to introduce the new CQI requirements, the applicability rule for URLLC CQI requirements should be clearly defined.

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017498**.

**R4-2017498 CR to TS 38.101-4: Applicability rules for URLLC CSI requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0101 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015621)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **postponed**.

**R4-2015863 On 0.001%BLER CQI test**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion on CQI test

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **noted**.

**R4-2015864 Simulation results on URLLC UE CQI reporting requirements for CQI table 3**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This paper provides our simulation results for 0.001% BLER

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **noted**.

**R4-2016375 Draft CR on CQI reporting requirements with Table 3**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0114 Cat: B (Rel-16)  
  
 Source: Apple*

**Abstract:**

CQI Table 3 is introduced for target BLER of 10-5 on PDSCH. CQI reporting requirements for Table 3 are agreed to be introduced for URLLC in RAN4.

**Discussion:**

The secretary commented that the CR number should be zero padded, i.e. 114 -> 0114, and encouraged the source company to consider removal of 'Draft' from the title because the document type is CR. See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017499**.

**R4-2017499 Draft CR on CQI reporting requirements with Table 3**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0114 rev 1 Cat: B (Rel-16)  
  
 Source: Apple*

(Replaces R4-2016375)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **postponed**.

**R4-2016376 Draft CR on Applicability of CQI reporting requirements with Table 3**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0115 Cat: F (Rel-16)  
  
 Source: Apple*

**Abstract:**

CQI Table 3 is introduced for target BLER of 10-5 on PDSCH. CQI reporting requirements for Table 3 are agreed to be introduced for URLLC in RAN4. Applicability of newly added tests for optional UE features needs to be added.

**Discussion:**

The secretary commented that the CR number should be zero padded, i.e. 115 -> 0115, and encouraged the source company to consider removal of 'Draft' from the title because the document type is CR. See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **not pursued**.

**R4-2016445 Views on URLLC Ultra-low BLER CSI Reporting Test Cases**

*Type: discussion For: (not specified)  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **noted**.

###### 7.8.1.1.3 BS demodulation requirements [NR\_L1enh\_URLLC-Perf]

**R4-2014543 Simulation results for Ultra-low BLER BS requirements**

*Type: other For: Information  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **noted**.

**R4-2015024 Test requirements for 0.001% BLER**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0156 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

This CR to introduce URLLC into the performance specifications is created according to the CR work split agreed at RAN4#95-e. The following areas are covered:

Requirements/Measurement of Performance requirements

Annex C.3 / Measurement system set-up Annex D (for 0.001% BLER)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017501**.

**R4-2017501 Test requirements for 0.001% BLER**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0156 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015024)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **agreed**.

**R4-2015025 Introduction of URLLC 0.001% BLER requirement**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0234 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

There is a need to introduce the URLLC requirement for 0.001% BLER, as discussed for the CR split at RAN4#95-e.

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017502**.

**R4-2017502 Introduction of URLLC 0.001% BLER requirement**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0234 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015025)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **agreed**.

**R4-2015094 On NR Rel-16 BS demodulation performance requirements with ultra-low BLER**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we have explained our choices for an ultra-low BLER URLLC statistical testing appendix CR. No new simulation results were included.

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **noted**.

**R4-2015096 CR for 38.104: Ultra high reliability BS demodulation requirements**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0243 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Endorsed draftCR in last meeting.

Errors in configuration tables.

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017503**.

**R4-2017503 CR for 38.104: Ultra high reliability BS demodulation requirements**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0243 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015096)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **agreed**.

**R4-2015098 CR for 38.141-1: URLLC testing methodology appendix**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0157 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, Intel, Ericsson, Huawei, HiSilicon*

**Abstract:**

The WF [R4-2012646] requested to provide a detailed description of the test methodology in the BS conformance specification

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017504**.

**R4-2017504 CR for 38.141-1: URLLC testing methodology appendix**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0157 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, Intel, Ericsson, Huawei, HiSilicon*

(Replaces R4-2015098)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **agreed**.

**R4-2015099 CR for 38.141-2: URLLC testing methodology appendix**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0235 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, Intel, Ericsson, Huawei, HiSilicon*

**Abstract:**

The WF [R4-2012646] requested to provide a detailed description of the test methodology in the BS conformance specification.

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017505**.

**R4-2017505 CR for 38.141-2: URLLC testing methodology appendix**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0235 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, Intel, Ericsson, Huawei, HiSilicon*

(Replaces R4-2015099)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **agreed**.

**R4-2015625 CR to TS 38.141-1: Applicability of URLLC BS demodulation requirements**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0163 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

As demodulation requirements for PUSCH mapping Type B with 2 symbol length allocated were agreed to be introduced in specification, the existing applicability for mapping type is needed to be updated when considering the new requirements.

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017521**.

**R4-2017521 CR to TS 38.141-1: Applicability of URLLC BS demodulation requirements**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0163 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015625)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **agreed**.

**R4-2015627 CR to TS 38.141-2: FRC for FR1 URLLC BS performance requirements**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0240 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For URLLC test cases, new FRCs are defined and agreed in RAN4.

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017506**.

**R4-2017506 CR to TS 38.141-2: FRC for FR1 URLLC BS performance requirements**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0240 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015627)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **agreed**.

**R4-2015861 Summary of ideal and impairment results for ultra-low BLER BS**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

Moderator summary of simulation results

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **revised to R4-2017500**.

**R4-2017500 Summary of ideal and impairment results for ultra-low BLER BS**

*Type: other For: Information  
 Source: Ericsson*

(Replaces R4-2015861)

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **noted**.

**R4-2015867 Base station ultra-low BLER simulation results**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

Simulation results

**Discussion:**

See email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 in R4-2017420.

**Decision:** The document was **noted**.

##### 7.8.1.2 Performance requirements with higher BLER [NR\_L1enh\_URLLC-Perf]

**R4-2017421 Email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][323] NR\_URLLC\_Demod\_Part2. The email thread was moderated by Lu Bai (CHENGDU TD TECH LTD.) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017621**.

**R4-2017621 Email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2017421)

**Discussion:**

The contribution summarized email discussion thread [97e][323] NR\_URLLC\_Demod\_Part2. The email thread was moderated by Lu Bai (CHENGDU TD TECH LTD.) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017509 WF on URLLC UE performance requirements with higher BLER**

*Type: other For: discussion  
 Source: Intel*

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **approved**.

**R4-2017510 Simulation assumption for URLLC FR2 UE performance requirements with higher BLER**

*Type: other For: discussion  
 Source: Intel*

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **approved**.

**R4-2017525 WF on URLLC BS performance requirement with higher BLER**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017675**.

**R4-2017675 WF on URLLC BS performance requirement with higher BLER**

*Type: other For: discussion  
 Source: Huawei*

(Replaces R4-2017525)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **approved**.

**R4-2017526 Simulation assumption for URLLC FR2 BS performance requirement with higher BLER**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **approved**.

###### 7.8.1.2.1 UE demodulation requirements [NR\_L1enh\_URLLC-Perf]

**R4-2014242 UE demodulation requirements with higher BLER**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2014243 CR on requirements with slot aggreagation in FR2**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0085 Cat: B (Rel-16)  
  
 Source: Apple*

**Abstract:**

Demodulation performance requirements for PDSCH slot aggregation feature in FR2 has been agreed to be introduced in RAN4 for URLLC. New requirements for this need to be added to for this.

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017514**.

**R4-2017514 CR on requirements with slot aggregation in FR2**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0085 rev 1 Cat: B (Rel-16)  
  
 Source: Apple*

(Replaces R4-2014243)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **agreed**.

**R4-2014544 Discussion on UE demodulation requirements for URLLC**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2015129 Discussion on eMBB UE performance requirement with pre-emption**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2015616 Simulation results on UE PDSCH demodulation reuqirements with higher BLER and low latency**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Abstract:**

provide simulation results for FR1 low latency case

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2015617 Discussion on URLLC UE demodulation requirements with higher BLER and low latency**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Abstract:**

Discuss the open issues.

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2015620 CR to TS 38.101-4: Addition of UE performance requirements for FR1 URLLC PDSCH repetitions over multiple slots**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0100 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

New feature of PDSCH repetitions over multiple slots were defined for URLLC. In order to test the performance of this new feature, a demodulation requirements are introduced as per RAN4 agreements.

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017511**.

**R4-2017511 CR to TS 38.101-4: Addition of UE performance requirements for FR1 URLLC PDSCH repetitions over multiple slots**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0100 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015620)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **agreed**.

**R4-2015628 Summary of simulation results for UE URLLC demodulation performance requirements**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2016005 CR on FRC for UE Higher BLER requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0110 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Definition of FR1 UE demodulation requirements for scenarios with repetition and Type B mapping

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017512**.

**R4-2017512 CR on FRC for UE Higher BLER requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0110 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2016005)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **agreed**.

**R4-2016103 Discussion on UE URLLC demodulation performance requirements with higher BLER**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper provides an overview of UE URLLC demodulation requirements

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2016104 Simulation results on UE URLLC demodulation performance requirements with higher BLER**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This paper provides our simulation results for URLLC High BLER requirements

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2016106 CR to TS 38.101-4: Performance requirements for URLLC High BLER feature tests**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0111 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

New feature of PDSCH URLLC feature test requirements including:

Test case for pre-emption indication for FR1

FR2 Type B requirements

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017513**.

**R4-2017513 CR to TS 38.101-4: Performance requirements for URLLC High BLER feature tests**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0111 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016106)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **agreed**.

**R4-2016462 Views on URLLC High BLER Demodulation Test Cases**

*Type: discussion For: (not specified)  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2016504 CR on FR1 PDSCH Mapping Type B and Processing Capability 2 Requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0121 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Draft CR R4-2012652 was endorsed in last meeting with this change: FR1 PDSCH Mapping Type B and Processing Capability 2 requirements are not defined.

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017516**.

**R4-2017516 CR on FR1 PDSCH Mapping Type B and Processing Capability 2 Requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0121 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2016504)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017665**.

**R4-2017665 CR on FR1 PDSCH Mapping Type B and Processing Capability 2 Requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0121 rev 2 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2017516)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **agreed**.

###### 7.8.1.2.2 BS demodulation requirements [NR\_L1enh\_URLLC-Perf]

**R4-2014545 Discussion on BS demodulation requirements for URLLC**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2014820 CR for TS 38.141-2: Introduction of performance requirements of PUSCH repetition type A and PUSCH mapping type B for URLLC**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0232 Cat: B (Rel-16)  
  
 Source: NTT DOCOMO, INC.*

**Abstract:**

This CR introduces performance requirements of PUSCH repetition Type A and PUSCH mapping type B with non-slot transmission for URLLC.

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017517**.

**R4-2017517 CR for TS 38.141-2: Introduction of performance requirements of PUSCH repetition type A and PUSCH mapping type B for URLLC**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0232 rev 1 Cat: B (Rel-16)  
  
 Source: NTT DOCOMO, INC.*

(Replaces R4-2014820)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **not pursued**.

**R4-2014821 Views on NR BS performance for high-reliability and low-latency**

*Type: other For: Approval  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2015023 FRCs for URLLC**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0155 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

This CR to introduce URLLC into the performance specifications is created according to the CR work split agreed at RAN4#95-e. The following areas are covered FRC

A draft CR with the same content was endorsed in R4-2012654 at RAN4#96-e

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017518**.

**R4-2017518 FRCs for URLLC**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0155 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015023)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **agreed**.

**R4-2015095 On NR Rel-16 BS demodulation performance requirements with higher BLER and simulation results**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we have provided our views on various open high reliability and low latency (e)URLLC issues. In particular on, remaining configurations for FR1 high reliability, remaining configurations for FR2 low latency, and introduction of Rel-16

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2015097 CR for 38.104: Low latency BS demodulation requirements**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0244 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Endorsed draftCR in last meeting.

Errors in configuration tables.

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017524**.

**R4-2017524 CR for 38.104: Low latency BS demodulation requirements**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0244 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015097)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **agreed**.

**R4-2015122 Discussion and simulation results for BS URLLC requirement**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2015123 Draft CR on PUSCH repetition type A and PUSCH mapping type B radiated performance requirement for TS 38.104**

*Type: draftCR For: Endorsement  
 38.104 v16.5.0  
 Source: Samsung*

**Abstract:**

PUSCH requirements with high reliability and lower latency have been introduced in Rel-16 URLLC WI for FR2

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017519**.

**R4-2017519 Draft CR on PUSCH repetition type A and PUSCH mapping type B radiated performance requirement for TS 38.104**

*Type: draftCR For: Endorsement  
 38.104 v16.5.0  
 Source: Samsung*

(Replaces R4-2015123)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **endorsed**.

**R4-2015124 Draft CR on FRC for URLLC BS radiated performance requirement for TS 38.141-2**

*Type: draftCR For: Endorsement  
 38.141-2 v16.5.0  
 Source: Samsung*

**Abstract:**

PUSCH requirements with high reliability and lower latency have been introduced in URLLC in Rel-16. There is no FRC table for FR2 PUSCH requirements with high reliablity and lower latency requirement testing

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017520**.

**R4-2017520 Draft CR on FRC for URLLC BS radiated performance requirement for TS 38.141-2**

*Type: draftCR For: Endorsement  
 38.141-2 v16.5.0  
 Source: Samsung*

(Replaces R4-2015124)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **endorsed**.

**R4-2015618 Discussion on URLLC BS demodulation requirements with higher BLER and low latency**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Abstract:**

Discuss the open issues.

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2015619 Simulation results on PUSCH demodulation reuqirements with higher BLER and low latency**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Abstract:**

provide simulation results for FR1 high reliability and low latency case

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2015623 CR to TS 38.104: Addition of BS performance requirements for URLLC PUSCH repetition Type A**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0249 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

PUSCH repetition Type A was agreed to be introduced as the new feature for URLLC to improve the high reliability for PUSCH performance. In order to verify the demodulation performance for PUSCH repetition Type A, the new demodulation requirements are defined.

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017527**.

**R4-2017527 CR to TS 38.104: Addition of BS performance requirements for URLLC PUSCH repetition Type A**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0249 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015623)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **agreed**.

**R4-2015624 CR to TS 38.141-1: Addition of BS conformance testing for URLLC demodulation requirements with higher BLER**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0162 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

PUSCH repetition Type A was defined as the new feature to improve the high reliability for PUSCH performance. PUSCH mapping Type B with low number of symbols was agreed to be configured to reduce latency. In order to verify these two features for URLLC, the demodulation requirements are defined and should be introduced in this specification.

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017528**.

**R4-2017528 CR to TS 38.141-1: Addition of BS conformance testing for URLLC demodulation requirements with higher BLER**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0162 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015624)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **agreed**.

**R4-2015626 CR to TS 38.141-2: Addition of BS conformance testing for FR2 URLLC PUSCH repetition Type A**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0239 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

PUSCH repetition Type A was agreed to be introduced as the new feature for URLLC FR2 to improve the high reliability for PUSCH performance. In order to verify the demodulation performance for PUSCH repetition Type A, the new demodulation requirements are defined.

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017522**.

**R4-2017522 CR to TS 38.141-2: Addition of BS conformance testing for FR2 URLLC PUSCH repetition Type A**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0239 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon, NTT DoCoMo*

(Replaces R4-2015626)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **agreed**.

**R4-2015629 Summary of simulation results for BS URLLC demodulation performance requirements**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2015865 BS demodulation parameters**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Proposals for remaining open parameters

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2015866 Simulation results for BS high BLER URLLC**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

Simulation results

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **noted**.

**R4-2016006 CR on FR2 requirements for PUSCH mapping Type B with low number of symbols**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0246 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Definition of FR2 BS PUSCH demodulation requirements for scenarios with PUSCH mapping Type B with low number of symbols

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **revised to R4-2017523**.

**R4-2017523 CR on FR2 requirements for PUSCH mapping Type B with low number of symbols**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0246 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation, NTT DoCoMo*

(Replaces R4-2016006)

**Discussion:**

See email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 in R4-2017421.

**Decision:** The document was **agreed**.

### 7.9 Enhancements on MIMO for NR [NR\_eMIMO]

#### 7.9.1 UE RF core requirements maintenance (38.101) [NR\_eMIMO-Core]

**R4-2016613 Email discussion summary for [97e][111] NR\_eMIMO\_UE\_RF**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

**Discussion:**

The contribution summarized email discussion thread [97e][111] NR\_eMIMO\_UE\_RF. The subject for discussion was UE RF core requirements. The email thread was moderated by He Wang (Samsung Electronics Czech) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016955**.

**R4-2016955 Email discussion summary for [97e][111] NR\_eMIMO\_UE\_RF**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

(Replaces R4-2016613)

**Discussion:**

The contribution summarized email discussion thread [97e][111] NR\_eMIMO\_UE\_RF. The subject for discussion was UE RF core requirements. The email thread was moderated by He Wang (Samsung Electronics Czech) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

##### 7.9.1.1 DMRS enhancement with PI/2 BPSK [NR\_eMIMO-Core]

**R4-2016481 CR for TS 38.101-1: correction of Pi/2 BPSK**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0568 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

There was no evaluation of Pi/2 BPSK with new DMRS for intra-band CA in Rel-16. And there is no A-MPR table in clause 6.2A.2.1.

**Discussion:**

See email discussion summary for [97e][111] NR\_eMIMO\_UE\_RF in R4-2016613.

**Decision:** The document was **not pursued**.

**R4-2016813 CR for TS 38.101-1: correction of Pi/2 BPSK**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0568 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016481)

**Discussion:**

See email discussion summary for [97e][111] NR\_eMIMO\_UE\_RF in R4-2016613.

**Decision:** The document was **withdrawn**.

##### 7.9.1.2 Uplink Tx Full Power transmission [NR\_eMIMO-Core]

**R4-2016480 On MPR for TxD and UL MIMO**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

Chair: It is agreed that one set of MPR requirements should be adopted for both UL MIMO (including ULFPTx) and TxD

See email discussion summary for [97e][111] NR\_eMIMO\_UE\_RF in R4-2016613.

**Decision:** The document was **noted**.

#### 7.9.2 RRM core requirements maintenance (38.133) [NR\_eMIMO-Core]

**R4-2017015 Email discussion summary for [97e][216] NR\_eMIMO\_RRM**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

**Discussion:**

The contribution summarized email discussion thread [97e][216] NR\_eMIMO\_RRM. The topic areas for discussion were RRM Core requirements. The email thread was moderated by Yiyan Zhang (Samsung Electronics Iberia SA) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017286**.

**R4-2017286 Email discussion summary for [97e][216] NR\_eMIMO\_RRM**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

(Replaces R4-2017015)

**Discussion:**

The contribution summarized email discussion thread [97e][216] NR\_eMIMO\_RRM. The topic areas for discussion were RRM Core requirements. The email thread was moderated by Yiyan Zhang (Samsung Electronics Iberia SA) and treated during RRM session chaired by Andrey Chervyakov (Intel).

GTW session (November 06, 2020)

Issue 3-1-3: Accuracy requirements of L1-SINR under normal condition

* Proposals
  + Option 1: For Scenario 1A: ±5 dB in FR1 and ±6.5 dB in FR2; for CMR + IMR: ±3.5 dB in FR1 and ±5 dB in FR2 (Qualcomm)
    - Option 1a: same requirement for FR1 and FR2 for CMR only; Different for CMR+IMR. (Apple)
  + Option 2: For Scenario 1A: ±4.5 dB in FR1 and ±4.5 dB in FR2; for CMR + IMR: ±4 dB in FR1 and ±4 dB in FR2 (MediaTek)
  + Option 3: +/-4.0dB for Scenario 1A; +/-3.5 dB for Scenario 2A and 2B; and +/-3.0dB for Scenario 2C and 2D (Samsung)
  + Option 4: +/-3.5dB for Scenario 1A, 2A and 2B; and +/-3.0dB for Scenario 2C and 2D (Huawei)
* Moderator’s opinion: Key point of this issue is to decide how many levels for the accuracy requirements. After that we can derive the concrete number from the determined methodology. We can discuss in the 1st round GTW session for details.
* Tentative agreements: Discuss on How many levels for accuracy requirement:
  + Option 1 (QC, MTK): two levels [1A], [2A, 2B, 2C, 2D]
  + Option 2 (SS): three levels [1A], [2A, 2B], [2C, 2D]
  + Option 3 (HW): two levels [1A, 2A, 2B], [2C, 2D]

Discussion:

MTK: 5 scenarios. Need to group the requirements.

Apple: no need to group the requirements.

E///: we need to check the results first.

Issue 3-1-4: Difference of accuracy requirements of L1-SINR between FR1 and FR2

* Proposals
  + Option 1: No obvious difference as it is SINR (MediaTek, Huawei, Samsung, CMCC, Intel)
  + Option 2: Consider RF margin 1.5dB higher for FR2 than FR1(Qualcomm)
    - Option 2a: Same RF margin for CMR only; 1.5 dB higher for FR2 (Apple)
* Moderator’s opinion: We can discuss in the 1st round GTW session for details. Option 2a (difference between FR1 and FR2 for CMR only scenario) would be a compromise solution.
* Tentative agreements: Discuss on accuracy requirement difference between FR1 and FR2
  + Option 1: No obvious difference
  + Option 2: FR2 1.5dB higher than FR1
  + Option 3: Difference exists for CMR only scenario

Discussion

QC: We need to have higher margin for FR2 due to directivity.

Samsung: L1-SINR RF margin should be smaller than for L1-RSRP case which already has 1.5dB

MTK: RAN1 agreement is that UE needs to use same Rx beam from channel and interference measurements. So, we think that the margin is not needed.

Apple: For CMR both noise and interference are measured on the same resource. So, all RF margins are cancelled out. For IMR the measurements are done on different Tx beams. Even if Rx beam is same then there still may be some mismatch.

MTK: not clear how different Tx beams will affect the accuracy

Apple: we make channel and interference measurements at different time. We cannot make sure that RF parameters are same.

HW: For CMR+IMR scenario as MTK mentioned UE will use same Rx beam and no margin needed

Intel: same view as MTK. In case of different Tx beams and same Rx beams there is no impact on accuracy and rather on side conditions.

Agreements:

Follow RAN1 assumption that UE uses same Rx beam for channel and interference measurements for both CMR only and CMR+IMR cases

Margins for L1-SINR accuracy requirements

CMR only measurements: same implementation margin is applied for FR1 and FR2. No FR2 specific margin is applied.

CMR+IMR measurements: additional FR2 margin is FFS

Issue 3-1-5: Accuracy requirements of L1-SINR under extreme condition

* Proposals
  + Option 1: 1dB higher for extreme condition than normal condition (Samsung, Ericsson)
  + Option 2: Other values (Qualcomm, Apple)
    - Option 2a: 2dB higher for extreme condition than normal condition (MediaTek)
* Moderator’s opinion: We can discuss in the 1st round GTW session for details.
* Tentative agreements: Discuss in the GTW, extreme condition compared to normal condition
  + Option 1: 1dB higher
  + Option 2: other values (proponent could give their proposal)

Discussion:

MTK: we have 2dB for L1-RSRP

Samsung: we need to follow SS-SINR which has 1dB higher

MTK: SS-SINR is L3 measurement with 5 samples. L1-SINR is 1 sample and is quite different.

Samsung: L1-SINR is not an absolute metric comparing to L1-RSRP and accuracy should be better.

E///: for SSB-based L1-RSRP the difference is 1dB under extreme conditions

MTK: need to check the values

Apple: sometimes the delta is up to 4.5dB for RSRP for absolute case and 1 dB for relative RSRP

E///: for relative accuracy the margin is 1 dB

Agreement: Accuracy requirements of L1-SINR under extreme condition is

* Option 1: 1dB higher than for normal condition (Samsung, Ericsson)
* Option 2: 2dB higher than for normal condition
* Other options are not precluded

Issue 3-2-3: Io condition of dBm/BWChannel for accuracy requirement

* Proposals
  + Option 1: Define accuracy requirement for “Max Io -50 dBm” only (MediaTek, Qualcomm, Huawei, Samsung)
  + Option 2: Define accuracy requirement for “Max Io -70 dBm” and “Min Io -70 dBm + Max Io -50 dBm” (Ericsson)
* Moderator’s opinion: We can discuss in the 1st round GTW session for details.
* Tentative agreements: Discuss on Io condition of dBm/BWChannel for accuracy requirement
  + Option 1: “Max Io -50 dBm” only
  + Option 2: “Max Io -70 dBm” and “Min Io -70 dBm + Max Io -50 dBm”

Agreement: Define accuracy requirement for “Max Io -50 dBm” only

GTW session (November 13, 2020)

Issue 3-1-2: Simulation-based accuracy alignment of L1-SINR measurement accuracy

Tentative agreements:

For the L1-SINR accuracy, simulation-based accuracy, which denotes baseband accuracy only, is derived from simulation results:

±4.5dB, ±3.5dB, ±3.5dB, ±3.0dB, ±3.0dB for Scenario 1A, 2A, 2B, 2C, 2D, respectively.

Companies will further study on the final accuracy requirement derived by adding implementation factors to the simulation-based accuracy.

Conclusion: The summary of L1-SINR accuracy derived from the simulation results is as follows

* Scenario 1A: [±4.5]dB
* Scenario 2A: [±3.5]dB
* Scenario 2B: [±3.5]dB
* Scenario 2C: [±3.0]dB
* Scenario 2D: [±3.0]dB
* Note 1: the results do not include implementation margin
* Note 2: the results are derived for the 99.9% L1-SINR accuracy error interval
* Companies can bring additional results in the next meeting and further discuss the methodology to derive the final accuracy values

Structure for L1-SINR measurement accuracy requirement in the spec

Agreement:

* Define separate sub-sections for [1A], [2A, 2C], [2B, 2D] (i.e. same as the core requirement).
  + Note: the grouping does not have impact on the measurement accuracy for each scenario

**Decision:** The document was **noted**.

**R4-2014244 Discussion on RRM requirements for Multi-TRP**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

**R4-2014245 CR to 38.133 on RRM requirements for multi-TRxP**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1143 Cat: F (Rel-16)  
  
 Source: Apple*

**Abstract:**

In RAN4#96e it was agreed that there are no impacts to MRTD requirements due to multi TRxP deployment and in addition it was captured in chairman’s notes that signals from multi-TRxPs of the same serving cell will be received within CP in intra-band contiguous CA scenarios. The agreement doesn’t cover the case of multiple CCs. There is a need to further clarify that signals from all CCs and multi-TRxP are received within CP.

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **postponed**.

**R4-2014246 CR to 38.133 on Link recovery requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1144 Cat: F (Rel-16)  
  
 Source: Apple*

**Abstract:**

PBFD and PCBD was introduced in Rel-16 eMIMO for BFD and CBD respectively for SCell. Currently, PBFD and PCBD are defined as:

The values of PBFD used in Table 8.5.3.2-1 and Table 8.5.3.2-2 are defined as

For each CSI-RS resource in the set configured for PCell or PSCell

-PBFD = 1,.

For each CSI-RS resource in the set configured for a Scell

-PBFD is the number of band(s) on which UE is performing beam failure detection only for Scell.

The values of PCBD used in Table 8.5.5.2-1 and Table 8.5.5.2-2 are defined as

For each SSB resource in the set configured for Pcell or PSCell

-PCBD = 1.

For each SSB resource in the set configured for a Scell

-PCBD is the number of band(s) on which UE is performing candidate beam detection only for Scell.

The values of PCBD used in Table 8.5.6.2-1 and Table 8.5.6.2-2 are defined as

For each CSI-RS resource in the set configured for Pcell or PSCell

-PCBD = 1.

For each CSI-RS resource in the set configured for a Scell

-PCBD is the number of band(s) on which UE is performing candidate beam detection only for Scell.

Based on the current definition of PBFD and PCBD, for each resource in PCell or PSCell, the value is 1. This would be fine for SA, EN-DC and NE-DC when only PCell or PScell are configured. But this doesn’t cover NR-DC when we have both PCell and PScell configured.

The definition of PBFD and PCBD needs be updated to cover NR-DC case.

As an example, the proposed change for PCBD for SSB based CBD is captured below:

The values of PCBD used in Table 8.5.5.2-1 and Table 8.5.5.2-2 are defined as

For each SSB resource in the set configured for PCell or PSCell in EN-DC or NE-DC or SA; or PCell in NR-DC

- PCBD = 1.

For each SSB resource in the set configured for PSCell in NR-DC

- PCBD = 1 + number of band(s) on which UE is performing candidate beam detection only for SCell.

For each SSB resource in the set configured for a Scell

- PCBD is the number of band(s) on which UE is performing candidate beam detection only for Scell in EN-DC or NE-DC or SA

- PCBD = 1+ number of band(s) on which UE is performing candidate beam detection only for Scell.

Similar changes are required for PBFD and PCBD for CSI-RS based CBD

**Discussion:**

The secretary asked what is the correct Version? It reads 16.2.0 on the coversheet but the CR is allocated for 16.5.0. See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **postponed**.

**R4-2015826 CR: Clarification of L1-SINR reporting with CSI-RS based CMR and dedicated IMR configured**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1334 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Clarification of L1-SINR reporting with CSI-RS based CMR and dedicated IMR configured.

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **revised to R4-2017165**.

**R4-2017165 CR: Clarification of L1-SINR reporting with CSI-RS based CMR and dedicated IMR configured**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1334 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015826)

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **agreed**.

**R4-2016029 DraftCR to TS38.133 on L1-SINR Measurement Requirement**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Samsung*

**Abstract:**

L1-SINR measurement is introduced in Rel-16 MIMO enhancement work item. Accordingly, L1-SINR measurement requirement needs to be defined. However, current section 9.8 for L1-SINR measurement requirement in TS38.133 is not complete.

**Discussion:**

Chair: official CR needs to be resubmitted in the next meeting.

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **endorsed**.

#### 7.9.3 RRM perf. requirements (38.133) [NR\_eMIMO-Perf]

**R4-2017164 WF on NR eMIMO RRM Performance requirements**

*Type: other For: discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **revised to R4-2017375**.

**R4-2017375 WF on NR eMIMO RRM Performance requirements**

*Type: other For: discussion  
 Source: Samsung*

(Replaces R4-2017164)

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **approved**.

**R4-2017376 Draft Big CR: Introduction of Rel-16 NR eMIMO RRM performance requirements and test cases**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Samsung*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

##### 7.9.3.1 General [NR\_eMIMO-Perf]

**R4-2014756 Discussion on RRM Performance part for Rel-16 NR eMIMO**

*Type: discussion For: Approval  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

##### 7.9.3.2 L1-SINR measurement accuracy [NR\_eMIMO-Perf]

**R4-2014247 Simulation results for L1-SINR Measurement accuracy**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

**R4-2014297 Requirements for L1-SINR measurement accuracy**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm CDMA Technologies*

**Abstract:**

We present the simulation results in this contribution and propose L1-SINR accuracy values.

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

**R4-2014603 Discussion on L1-SINR measurement accuracy requirement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

**R4-2014758 Simulation results summary for L1-SINR measurement accuracy**

*Type: discussion For: Information  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

**R4-2014759 Discussion on L1-SINR measurement accuracy requirement**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

**R4-2015471 Discussion on L1-SINR measurement accuracy requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

**R4-2016239 Simulation results of L1-SINR measurement accuracy**

*Type: other For: Discussion  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The document has presented the simulation results of L1-SINR measurement accuracy for CMR-only, SSB+NZP-IMR, SSB+ZP-IMR, CSI-RS+NZP-IMR and CSI-RS+ZP-IMR.

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

**R4-2016240 CR to TS 38.133: Adding L1-SINR accuracy requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Following the approval of the L1-SINR measurement requirements, the L1-SINR accuracy requirements need to be specified.

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **revised to R4-2017166**.

**R4-2017166 CR to TS 38.133: Adding L1-SINR accuracy requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016240)

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **postponed**.

##### 7.9.3.3 Test cases [NR\_eMIMO-Perf]

###### 7.9.3.3.1 L1-SINR measurements [NR\_eMIMO-Perf]

**R4-2014291 Draft test case CR on measurement procedure of L1-SINR for CSI-RS-based CMR and no dedicated IMR**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm CDMA Technologies*

**Abstract:**

The core requirements were completed in discussions and specified in R4 96-e. This CR aims to introduce the L1-SINR measurement procedure test case for the scenario of CSI-RS based CMR and no dedicated IMR.

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **revised to R4-2017167**.

**R4-2017167 Draft test case CR on measurement procedure of L1-SINR for CSI-RS-based CMR and no dedicated IMR**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm CDMA Technologies*

(Replaces R4-2014291)

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **endorsed**.

**R4-2014604 Discussion on test cases for L1-SINR measurement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

**R4-2014757 DraftCR on L1-SINR measurement test case with CSI-RS CMR and dedicated IMR**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Samsung*

**Abstract:**

In Rel-16, the L1-SINR measurement procedure requirement is defined. Therefore the according test cases should be defined in Annex A. In this draft CR, CSI-RS based CMR and dedicated IMR scenario is introduced.

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **revised to R4-2017168**.

**R4-2017168 DraftCR on L1-SINR measurement test case with CSI-RS CMR and dedicated IMR**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Samsung*

(Replaces R4-2014757)

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **endorsed**.

**R4-2015472 Discussion on L1-SINR measurement tests for NR eMIMO**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

**R4-2015473 DraftCR on L1-SINR measurement procedure tests with SSB based CMR and dedicated IMR**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

In Rel-16, the L1-SINR measurement procedure tests with SSB based CMR and dedicated IMR need to be introduced for NR eMIMO.

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **revised to R4-2017169**.

**R4-2017169 DraftCR on L1-SINR measurement procedure tests with SSB based CMR and dedicated IMR**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015473)

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **endorsed**.

**R4-2015827 Simulation results of L1-SINR measurement accuracy**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides the simulation results of L1-SINR measurement accuracy.

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

###### 7.9.3.3.2 BFR for SCell [NR\_eMIMO-Perf]

**R4-2014605 Discussion on test cases for SCell BFR**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

**R4-2014606 Introduction of test cases for BFD and link recovery procedure for Scell**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

**Abstract:**

The discussion of RRM core part for SCell BFR has been closed and it has been agreed that the test case for SCell BFR shall be defined in performance part. According to email discussion, the SCell BFR is divided into two categories as follows:

BFD and link recovery procedure (UE is not provided by schedulingRequestID-BFR-SCell-r16)

Link Recovery with Link Recovery Request (UE is provided by schedulingRequestID-BFR-SCell-r16)

The details between these two categories is discussed in discussion paper and the test case in this CR is defined for category 1 “BFD and link recovery procedure”.

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **revised to R4-2017170**.

**R4-2017170 Introduction of test cases for BFD and link recovery procedure for Scell**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

(Replaces R4-2014606)

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **postponed**.

**R4-2015828 Link recovery test with link recovery requests**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the test case for link recovery with LRR

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

**R4-2015829 Draft CR: Introduction of test case of link recovery with link recovery requests**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Ericsson*

**Abstract:**

Introduction of test case of link recovery with link recovery requests

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **revised to R4-2017171**.

**R4-2017171 Draft CR: Introduction of test case of link recovery with link recovery requests**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Ericsson*

(Replaces R4-2015829)

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **postponed**.

###### 7.9.3.3.3 DL/UL beam indication with reduced latency and overhead [NR\_eMIMO-Perf]

**R4-2014010 Test cases for applicable timing for PL RS activated by MAC-CE**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **noted**.

**R4-2014011 [draft CR] Test cases for applicable timing for PL RS activated by MAC-CE**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: ZTE Corporation*

**Abstract:**

Add test cases for delay requirements for pathloss RS activation / update.

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **postponed**.

###### 7.9.3.3.4 Others [NR\_eMIMO-Perf]

**R4-2014292 Draft test case CR on measurement performance of L1-SINR for CSI-RS-based CMR and no dedicated IMR**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm CDMA Technologies*

**Abstract:**

The core requirements were completed in discussions and specified in R4 96-e. This CR aims to introduce the test case of measurement performance for the scenario of CSI-RS based CMR and no dedicated IMR.

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **postponed**.

**R4-2015474 DraftCR on L1-SINR measurement accuracy tests with SSB based CMR and dedicated IMR**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

In Rel-16, the L1-SINR measurement accuracy tests with SSB based CMR and dedicated IMR need to be introduced for NR eMIMO.

**Discussion:**

See email discussion summary for [97e][216] NR\_eMIMO\_RRM in R4-2017015.

**Decision:** The document was **postponed**.

#### 7.9.4 Demodulation and CSI requirements (38.101-4) [NR\_eMIMO-Perf]

##### 7.9.4.1 General [NR\_eMIMO-Perf]

**R4-2017422 Email discussion summary for [97e][324] NR\_eMIMO\_Demod**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

**Discussion:**

The contribution summarized email discussion thread [97e][324] NR\_eMIMO\_Demod. The email thread was moderated by Yunchuan Yang (Samsung Guangzhou Mobile R&D) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017622**.

**R4-2017622 Email discussion summary for [97e][324] NR\_eMIMO\_Demod**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

(Replaces R4-2017422)

**Discussion:**

The contribution summarized email discussion thread [97e][324] NR\_eMIMO\_Demod. The email thread was moderated by Yunchuan Yang (Samsung Guangzhou Mobile R&D) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017529 WF for NR eMIMO PDSCH requirement**

*Type: other For: discussion  
 Source: Intel*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **approved**.

**R4-2017530 Simulation assumption for PDSCH requirement with single-DCI and Multi-DCI transmission schemes**

*Type: other For: discussion  
 Source: Ericsson, Intel*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **approved**.

**R4-2017531 Way forward on PMI reporting requirement for NR eMIMO**

*Type: other For: discussion  
 Source: Ericsson, Samsung*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **revised to R4-2017678**.

**R4-2017678 Way forward on PMI reporting requirement for NR eMIMO**

*Type: other For: discussion  
 Source: Ericsson, Samsung*

(Replaces R4-2017531)

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **approved**.

|  |
| --- |
| **GTW session 11.5th**  **Topic#2 CSI requirements**  **Issue 2-1-1: SU-MIMO VS MU-MIMO Setup**   * Proposals   + Option 1: SU-MIMO Set-up (Apple, R&S, Huawei, Qualcomm, Samsung) * Option 1a: Using SU-MIMO set-up to introduce PMI test cases meanwhile a MU-MIMO setup based demodulation test with test metric of either follow PMI based or random PMI based throughput can be introduced (Huawei) * Option 1b: Introduce Type II PMI test cases under SU-MIMO test set-up in Rel-16 timeframe. Further study and define proper performance requirements if needed under MU-MIMO scenarios in Rel-17 performance enhancement WI (Samsung)   + Option 2: MU-MIMO Set-up (Ericsson, Nokia)   Agreement:  Introduce Rel-16 eType II codebook requirements with SU-MIMO set-up under the condition that with proper test parameters, test metric/ test requirements and test procedure to ensure enough performance difference over than Type I i.e. UE which employ Type I reporting will fail in the test case   * Test metric : Further check results based on following candidate options during 2nd round   + Option 1: Following PMI/Random PMI   + Option 2: Following with eType II codebook / following PMI with Type I codebook   Further study and define proper performance requirements if needed under MU-MIMO scenario in Rel-17 performance enhancement WI.  The same agreements applied for Rel-15 Type II test case(s).  E//: We need to have clear meaning on what does the performance gap over Type I . We would like to further discuss test metric to guarantee the performance difference.  Apple: Any proposal for how to discriminate UE behavior?  E///: We should introduce test metric and test requirements to ensure UE processing properly.  Apple: Typically, we introduce test metric with TP ratio over random PMI. We see the gain achieved that’s the history we introduce test cases.  Huawei/Nokia: we would like to see the gain how to guarantee the discrimination UE behavior.  Apple: this meeting we have results show gain over Type I and random, what’s the plan we need to discuss the gain based on the results?  **Issue 2-2-1: MIMO Correlation**   * Proposals   + Option 1: XP (custom)low ( Ericsson)   + Option 2: XP Medium (Previous agreement)   Agreement:   * XP Medium (Baseline assumption) * XP (custom)low only can be considered if XP medium not workable   **Topic #1 PDSCH requirements**  **Issue 1-2-1: Number of test cases for single-DCI/multi-DCI eMBB transmission schemes**   * Proposals   + Option 1: 3 test cases per duplex mode with test applicability rule (Samsung, Intel, Ericsson, MTK, Qualcomm, Apple) * Test 1a: Single-DCI with frequency offset and negative time offset and overlapping scheduling * Test 1b: Single-DCI with positive time offset, and overlapping scheduling * Test 2a: Multi- DCI with frequency offset and negative time offset and non-overlapping scheduling * Applicability rule * If UE only supports single-DCI based multi-TRP transmission for eMBB, it should be tested with test case 1a and test case 1b * If UE can support both single-DCI and multi-DCI for eMBB, it should be tested test 2a and test 1b   + Option 2a: only 2 test cases per duplex mode (Huawei, Intel) * Test 1b: Single-DCI with frequency and positive time offset, and overlapping scheduling * Test 2a: Multi- DCI with frequency offset and negative time offset and non-overlapping scheduling   Agreement:  3 test cases per duplex mode with test applicability rule (Samsung, Intel, Ericsson, MTK, Qualcomm, Apple)   * Test 1a: Single-DCI with frequency offset and negative time offset and overlapping scheduling * Test 1b: Single-DCI with positive time offset, and overlapping scheduling * Test 2a: Multi- DCI with frequency offset and negative time offset and non-overlapping scheduling * Applicability rule * If UE only supports single-DCI based multi-TRP transmission for eMBB, it should be tested with test case 1a and test case 1b * If UE can support both single-DCI and multi-DCI for eMBB, it should be tested test 2a and test 1b * If UE only support multi-DCI transmission schemes for eMBB, it should be test 2a   **Issue 1-3-1: Test cases for URLLC Transmission schemes**  *Candidate options:*   * Proposals   + Option 1(Samsung, Intel, Ericsson, Huawei, MTK): Define performance requirement for URLLC transmission schemes with test applicability rule * Only FDM scheme A for UE capable of *supportFDM-SchemeA* and inter-slot TDM scheme for UE capable of *supportIntel-slotTDM* * Test applicability * FDM scheme is skipped if UE passes the multi-DCI based multi-TRP Tx requirements * TDM scheme is skipped if UE passes URLLC slot aggregation requirements and anyone of the other multi-TRP Tx requirements   + Option 2(Apple, Qualcomm): No to define requirement for URLLC transmission schemes   Agreement:  Define performance requirement for URLLC transmission schemes with test applicability rule   * Only FDM scheme A for UE capable of *supportFDM-SchemeA* and inter-slot TDM scheme for UE capable of *supportIntel-slotTDM* * Test applicability * FDM scheme is skipped if UE passes the multi-DCI based multi-TRP Tx requirements * TDM scheme is skipped if UE passes URLLC slot aggregation requirements and anyone of the other multi-TRP Tx requirements |

**R4-2014248 Draft CR for eMIMO demod requirements - General and Applicability rule**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Apple*

**Abstract:**

Under eMIMO WI, PDSCH demodulation requirements are agreed to be defined for multi-TRP multi-DCI and single DCI SDM scheme. The applicability of the newly defined tests needs to be captured.

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **revised to R4-2017601**.

**R4-2017601 Draft CR for eMIMO demod requirements - General and Applicability rule**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Apple*

(Replaces R4-2014248)

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **endorsed**.

**R4-2014741 Views for Multi-Panel/TRP transmision schemes**

*Type: discussion For: Approval  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2014742 Simulation results summary for Rel-16 eMIMO WI**

*Type: discussion For: Information  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

##### 7.9.4.2 Demodulation requirements [NR\_eMIMO-Perf]

**R4-2015830 Draft CR: PDSCH FRC for eMIMO sDCI/mDCI-based SDM transmission**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Ericsson*

**Abstract:**

FRC for PDSCH demodulation requirement with sDCI/mDCI-based SDM transmission is missing.

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **revised to R4-2017650**.

**R4-2017650 Draft CR: PDSCH FRC for eMIMO sDCI/mDCI-based SDM transmission**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Ericsson*

(Replaces R4-2015830)

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **postponed**.

###### 7.9.4.2.1 Single-DCI based SDM scheme [NR\_eMIMO-Perf]

**R4-2014557 Views on UE demodulation requirements for single-DCI based multi-TRP SDM Tx scheme**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2014743 Simulation results for Single-DCI SDM scheme**

*Type: discussion For: Information  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2015650 Simulaiton results of PDSCH requirements for Single-DCI SDM scheme**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2015653 DraftCR for 38.101-4: Introduction of PDSCH requirement with Single-DCI based SDM scheme**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Huawei, HiSilicon*

**Abstract:**

RAN4 agree to introduce PDSCH requirements of Single-DCI based SDM scheme and the aligned requirements need to be added into the specfication

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **revised to R4-2017532**.

**R4-2017532 DraftCR for 38.101-4: Introduction of PDSCH requirement with Single-DCI based SDM scheme**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015653)

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **endorsed**.

**R4-2015831 Simulation results of single-DCI based SDM transmission**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This contribution provides the PDSCH simulation results of sDCI-based SDM transmission schemes.

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

###### 7.9.4.2.2 Multi-DCI based transmission scheme [NR\_eMIMO-Perf]

**R4-2014556 Views on UE demodulation requirements for multi-DCI based multi-TRP Tx schemes**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2014744 Simulation results for Multi-DCI transmission schemes**

*Type: discussion For: Information  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2015128 Simulation results on PDSCH performance requirements for multi-DCI based multi-TRP transmission**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2015648 Discussion on left open issues of PDSCH performance requirements for multi/single-DCI transmission scheme**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2015649 Simulation results of PDSCH requirements for Multi-DCI transmission scheme**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2015654 DraftCR for 38.101-4: Introduction of PDSCH requirement with Multi-DCI based transmission scheme**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Huawei, HiSilicon*

**Abstract:**

RAN4 agree to introduce PDSCH requirements of Multi-DCI based transmission scheme and the aligned requirements need to be added into the specfication

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **revised to R4-2017533**.

**R4-2017533 DraftCR for 38.101-4: Introduction of PDSCH requirement with Multi-DCI based transmission scheme**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015654)

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **endorsed**.

**R4-2015832 PDSCH requirements for mDCI/sDCI-based SDM transmission**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the PDSCH demodulation requirements with mDCI/sDCI-based SDM transmission schemes.

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2015833 Simulation results of multi-DCI based SDM transmission**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This contribution provides the PDSCH simulation results of mDCI-based SDM transmission schemes.

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

###### 7.9.4.2.3 Single-DCI based transmission schemes (URLLC) [NR\_eMIMO-Perf]

**R4-2014558 Views on UE demodulation requirements for single-DCI based multi-TRP Repetition Tx schemes**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2014559 CR to TS 38.101-4: Performance requirements single-DCI based multi-TRP Repetition Tx schemes**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0089 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Add Rel-16 DL performacne requirements for single-DCI based multi-TRP Tx schemes

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked on the coversheet, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **revised to R4-2017534**.

**R4-2017534 CR to TS 38.101-4: Performance requirements single-DCI based multi-TRP Repetition Tx schemes**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0089 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2014559)

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **endorsed**.

**R4-2014745 Simulation results for Single-DCI URLLC schemes**

*Type: discussion For: Information  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2015651 Discussion on PDSCH performance reuqirements for Multi-TRP URLLC schemes**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2015652 Simulation results of PDSCH requirements for Single-DCI URLLC schemes**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2015834 Discussion on sDCI-based FDM/TDM transmission schemes**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the PDSCH demodulation requirements on sDCI-based FDM/TDM transmission schemes.

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

##### 7.9.4.3 CSI requirements [NR\_eMIMO-Perf]

**R4-2014249 On PMI reporting requirements with eType II codebook**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2014740 Views and simulation results for Rel-16 Type II PMI test case**

*Type: discussion For: Approval  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2014747 Draft CR for introduction of Rel-15 Type II PMI test cases**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Samsung*

**Abstract:**

Introduce PMI tese case to verify UE reporting accuracy for Rel-16 Type II codebook

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **revised to R4-2017535**.

**R4-2017535 Draft CR for introduction of Rel-15 Type II PMI test cases**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Samsung*

(Replaces R4-2014747)

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **endorsed**.

**R4-2014949 On PMI reporting requirements for enhanced Type II codebooks**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2015646 Discussion on the test setup of (e)Type II codebook based PMI reporting test**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2015647 Simulation results for SU-MIMO eType II codebook based PMI reporting test**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2016033 Discussion on Type II PMI reporting test definition**

*Type: discussion For: Approval  
 Source: Rohde & Schwarz*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2016101 Simulation results for Rel-16 Type II codebook**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This paper provides our simulation results for Rel-16 Type II codebook

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2016102 Evaluations of Rel-16 Type II PMI testing**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper provides our views on Rel-16 Type II codebook PMI testing

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

**R4-2016429 Views on CSI Reporting test cases for eMIMO**

*Type: discussion For: (not specified)  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][324] NR\_eMIMO\_Demod in R4-2017422.

**Decision:** The document was **noted**.

### 7.10 Add support of NR DL 256QAM for FR2 [NR\_DL256QAM\_FR2]

#### 7.10.1 Demodulation and CSI requirements (38.101-4) [NR\_DL256QAM\_FR2-Perf]

**R4-2017423 Email discussion summary for [97e][325] NR\_DL256QAM\_FR2\_Demod**

*Type: other For: discussion  
 Source: Moderator (China Telecomm)*

**Discussion:**

The contribution summarized email discussion thread [97e][325] NR\_DL256QAM\_FR2\_Demod. The email thread was moderated by Jingzhou Wu (China Telecom Corporation Ltd.) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017623**.

**R4-2017623 Email discussion summary for [97e][325] NR\_DL256QAM\_FR2\_Demod**

*Type: other For: discussion  
 Source: Moderator (China Telecomm)*

(Replaces R4-2017423)

**Discussion:**

The contribution summarized email discussion thread [97e][325] NR\_DL256QAM\_FR2\_Demod. The email thread was moderated by Jingzhou Wu (China Telecom Corporation Ltd.) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

|  |
| --- |
| **GTW session 11.9th**  **Issue 1-1: Propagation condition**  ·    *Agreement in RAN4 #96e (R4-2012666, WF)*  –   *Propagation condition*  o *Use fading channel*  o *In the next meeting, companies are encouraged to provide ideal and impairment results for both option 1A and option 1B, and down select one of the two options based on simulation results.*   * *Option 1A: TDLA30-300* * *Option 1B: TDLD30-75*   §   *Note: extra effort on TDLD channel model simplification is needed.*  ·    *Candidate options:*  –   Option 1A: TDLA30-300 (CTC, Huawei, DCM first priority)  –   Option 1B: TDLD30-75 (ZTE, Intel, QC, DCM second priority)  Intel: We evaluated the achievable SNR points, both options feasible meanwhile option 1B has larger margin and option 1B has extended test coverage since it’s not included in current spec.  E///: What’s TE vendors’ feedback, FR2 test feasibility has been analyzed in RAN5.  China Telecomm: We are fine with TDLD, meanwhile till now we don’t have simplified TDLD channel model, any volunteer plan to contribute?  In existing Rel-15 UE performance test cases, test cases with high SNR points already exists , nothing specific for this test cases. We are open to discuss the issue in generic way not stick to this WI specific.  Huawei: From simulation results, only 1dB performance difference, from test aspect, no much difference. Option 1B need additional work for channel model into option 1B.  QC: We share similar concern as E///, we have 1.5 dB additional margin compared to option 1A. We think option 1B more close to FR2 deployment reality.  Intel: We can volunteer to do the channel model work.  Agreement:  Introduce test case with option 1B based on the assumption that we can complete the work for introducing TDL-D channel model into specification in RAN4#98e. If no conclusion for introducing TDL-D channel model in RAN4#98e, then RAN4 will adopt option 1A instead of option 1B.  **Issue 2-1: Whether to define SDR requirements for FR2 256QAM**  ·    *Candidate options:*  –   Option 1: Add 256QAM (modulation format of 8) to FR2 SDR requirements (CTC, DCM)  –   Option 2: Not to define FR2 SDR requirements for 256QAM (Intel, Huawei, Ericsson, QC)  Intel: Due to SNR limitation, FR2 SDR test cases is quite challenge. With 256QAM cases, the applicable test cases quite rare for SDR test cases.  China Telecomm: We can comprise without 256QAM SDR test under the condition we can have CQI test cases with CQI table 2.  DoCoMo: Similar view as China Telecomm.  Huawei: Both fading and static CQI or only one of test cases for CQI test cases?  Agreement:  No SDR test cases for FR2 256QAM  Introduce fading CQI test cases only under rank1 with CQI table 2 in FR2  No static CQI test cases with rank2  **Issue 3-1 (Whether to define FR2 CQI reporting requirements for CQI table 2) & Issue 3-2 (SNR testing point)**  ·    *Check if it is reasonable to select the following options for the two technic issues discussed in the first round:*  –   Issue #1: Metrics to judge whether 256QAM can be ‘covered’   * Metric for AWGN condition: SNR achieving median CQI 12 * Metric for fading condition: SNR point that 256QAM can be reported with around 36% - 50% probability   –   Issue #2: use option 1   * Option 1: Extra 3dB margin needs to be considered for high SNR test point   ·    *Moderator’s recommendation:*  –   For AGWN condition with rank 2, not define CQI reporting requirements  –   For fading condition with rank 1, define CQI reporting requirements   * Candidate SNR testing point for the higher SNR: 17/18dB (without margin)   E///: For fading CQI and static CQI test, the reliability with 256QM CQI values is quite low which need to increase SNR points, about 20-22dB SNR points.  China Telecomm: From simulation results, at SNR 17-18 dB points , over 50% can achieve 256QAM CQI values. We think no test feasibility issue.  QC: Our study based fixed MCS levels, at least more 19dB to have 256QAM MCS levels. Another observation from E///, the achievable 20% BLER. With test, OLLA applied then 256QAM not achievable.  E///: When we decide test cases, we need to consider 10% BLER.  Agreement:  Fading CQI test cases under rank1 transmission with CQI table 2:   * SNR: FFS for higher test points   No SDR test cases for FR2 256QAM  Introduce fading CQI test cases only under rank1 with CQI table 2 in FR2  China Telecomm: In static CQI test cases, we use rank2 transmission. We already define candidate test applicable rules, if Static CQI rank2 test, then skip existing static CQI test cases with CQI table 1.  Static CQI test cases with rank 1: E///  Fading CQI test cases with rank 1: Huawei, China Telecomm |

**R4-2017536 WF on UE demodulation and CSI reporting requirements for FR2 DL 256QAM**

*Type: other For: discussion  
 Source: China Telecomm*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **approved**.

##### 7.10.1.1 UE Demodulation requirements [NR\_DL256QAM\_FR2-Perf]

**R4-2014546 Discussion on UE demodulation requirements for FR2 DL 256QAM**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2014547 Summary of simulation results FR2 DL 256QAM demodulation requirements**

*Type: other For: Information  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2014674 Updated work plan for FR2 DL 256QAM demodulation and CSI reporting requirements**

*Type: Work Plan For: Approval  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **approved**.

**R4-2014675 On UE demodulation requirements for FR2 DL 256QAM**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2015019 Propagation Condition for FR2 DL 256QAM**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2015021 CR to demodulation performance requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: ZTE Corporation*

**Abstract:**

The DL 256QAM requirements for FR2 for TDD are not specified.

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **revised to R4-2017537**.

**R4-2017537 CR to demodulation performance requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: ZTE Corporation*

(Replaces R4-2015021)

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **endorsed**.

**R4-2015314 Views on 256QAM UE requirements for FR2**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2015596 CR on applicability and FRC for PDSCH normal demodulation for DL 256QAM for FR2**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0095 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduce applicability rules and FRC for PDSCH normal demodulation for DL 256QAM for FR2 as per RAN4 agreements

**Discussion:**

The secretary commented that the CR number 0095 is missing on the coversheet. See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **endorsed**.

**R4-2015597 Discussion on PDSCH requirements for NR DL 256QAM for FR2**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2016095 Simulation results for FR2 256QAM UE demodulation**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This paper provides simulation results for UE demodulation for FR2 256QAM

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

##### 7.10.1.2 SDR requirements [NR\_DL256QAM\_FR2-Perf]

**R4-2014548 Discussion on SDR requirements for FR2 DL 256QAM**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2014676 On SDR requirements for FR2 DL 256QAM**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2015315 Views on 256QAM SDR requirements for FR2**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2015598 CR on SDR requirements for DL 256QAM for FR2**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0096 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduce SDR requirements for DL 256QAM for FR2 if RAN4 achieve agreements

**Discussion:**

The secretary commented that the CR number 0096 is missing on the coversheet. See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **revised to R4-2017538**.

**R4-2017538 CR on SDR requirements for DL 256QAM for FR2**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0096 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015598)

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **endorsed**.

**R4-2015599 Discussion on SDR requirements for NR DL 256QAM for FR2**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2015600 Summary of simulation results for SDR requirements**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2016093 Discussion on FR2 DL 256QAM**

*Type: discussion For: Approval  
 Source: Ericsson*

**Abstract:**

This paper provides our views on SDR requirements for FR2 256QAM

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

##### 7.10.1.3 CSI requirements [NR\_DL256QAM\_FR2-Perf]

**R4-2014677 On CQI reporting requirements for FR2 DL 256QAM**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2014678 Summary of CQI reporting simulation results for FR2 DL 256QAM (TDD)**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2015601 Discussion and simulation results on CQI requirements for NR DL 256QAM for FR2**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2016092 Discussion on FR2 DL 256QAM**

*Type: discussion For: Approval  
 Source: Ericsson*

**Abstract:**

This paper provides our views on CSI performance requirements for FR2 256QAM

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

**R4-2016094 Simulation results for FR2 256QAM UE CQI performance requirements**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This paper provides our simulation results for UE CQI performance requirements for FR2 256QAM

**Discussion:**

See email discussion summary for [97e][325] NR\_DL256QAM\_FR2 in R4-2017423.

**Decision:** The document was **noted**.

### 7.11 RF requirements for NR frequency range 1 (FR1) [NR\_RF\_FR1]

#### 7.11.1 RF core requirements maintenance [NR\_RF\_FR1-Core ]

**R4-2016614 Email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][112] NR\_RF\_FR1\_Part\_1. The subject for discussion was core maintenance. The email thread was moderated by Zhang Qian (HiSilicon Technologies Co. Ltd) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016956**.

**R4-2016956 Email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2016614)

**Discussion:**

The contribution summarized email discussion thread [97e][112] NR\_RF\_FR1\_Part\_1. The subject for discussion was core maintenance. The email thread was moderated by Zhang Qian (HiSilicon Technologies Co. Ltd) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016816 WF on DC location reporting for intra-band UL CA**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **approved**.

**R4-2016817 LS on DC location reporting for intra-band UL CA**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: RAN4*

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **approved**.

**R4-2016042 CR Correction to NS\_27 and Band 10 protection 38101-1 Rel16**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0556 Cat: A (Rel-16)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

This is a combined CR according to meeting guidelines:

A7 region contours do not match required back-off levels,

Band 10 protection removal has been agreed for LTE in R4-2011521. This CR applies this correction to relevant NR bands and NR CA combinations

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **agreed**.

##### 7.11.1.1 Intra-band contiguous DL CA for FR1 [NR\_RF\_FR1-Core]

**R4-2014956 CR to TS 38.101-1 on operating bands for intra-band CA (Rel-16)**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0523 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

For brevity, the operating bands for intra-band contiguous and non-contiguous CA in FR2 have been agreed to combine into one table. To be consistent with FR2, it is suggested in FR1 to use the same description of operating bands for intra-band contiguous and non-contiguous CA. In addition, section title for SUL bands should be moved from section 5.2B to 5.2C. NR band combination for SUL CA\_n78\_SUL\_n78-n86 should be corrected accordingly.

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **not pursued**.

##### 7.11.1.2 Intra-band UL CA for FR1 power class 3 [NR\_RF\_FR1-Core]

**R4-2014171 CA\_n7B AMPR REFSENS**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **noted**.

**R4-2014518 A-MPR definition for CA\_n7B, CA\_n48B, CA\_n41B and CA\_n41C**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0507 Cat: F (Rel-16)  
  
 Source: Nokia*

**Abstract:**

A-MPR is missing from CA configurations CA\_n7B, CA\_n41B, CA\_n41C and CA\_n48B altough these are already listed in specification as valid uplink configurations. CA\_7B needs MSD.

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **revised to R4-2016814**.

**R4-2016814 A-MPR definition for CA\_n7B, CA\_n48B, CA\_n41B and CA\_n41C**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0507 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia*

(Replaces R4-2014518)

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **revised to R4-2017824**.

**R4-2017824 A-MPR definition for CA\_n7B, CA\_n48B, CA\_n41B and CA\_n41C**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0507 rev 2 Cat: F (Rel-16)  
  
 Source: Nokia*

(Replaces R4-2016814)

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **agreed**.

**R4-2014519 Simulation results for CA\_7B A-MPR.**

*Type: discussion For: Discussion  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **noted**.

**R4-2014909 FR1 intra-band UL NCCA frequency separation and power class**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **noted**.

**R4-2016009 CA\_n7B 50MHz Measurements for A-MPR and MSD Test Points**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **noted**.

**R4-2016513 CR for intra-band UL CA non-contiguous CA requirement**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0574 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR capture the agreement for intra-band UL non-contiguous CA in RAN4 #95e and 96-e meeting.

Since intra-band UL non-contiguous CA is introduced in Rel-16, the UL RF requirement shall be added.

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **revised to R4-2016815**.

**R4-2016815 CR for intra-band UL CA non-contiguous CA requirement**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0574 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon, Nokia*

(Replaces R4-2016513)

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **agreed**.

**R4-2016515 on FR1 intra-band UL CA Pcmax**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **noted**.

##### 7.11.1.3 DC location for intra-band UL CA [NR\_RF\_FR1-Core]

**R4-2014714 DC location future compatible proposal**

*Type: discussion For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **noted**.

**R4-2014910 DC location for intra-band UL CA**

*Type: other For: Discussion  
 38.101-1 v..  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **noted**.

**R4-2015212 More on DC location reporting for Intra band UL CA**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution shares identified issue on the 2nd candidate in R4-2011906 using permutations of all possible simultaneously activated BWPs within configured BWPs whose details were proposed in R4-2011472 and provides an alternative

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **noted**.

**R4-2015565 Clarification of DC location for intra-band UL CA**

*Type: discussion For: Approval  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **noted**.

**R4-2015997 Future proof UE DC location signaling for intra-band UL CA**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

RAN4 should discuss the point further to find a future proof solution for FR1 and FR2 that covers DC location signalling in an UL CA operation and accounting for the BWP configuration for a larger number of CCs.

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **noted**.

**R4-2016514 on FR1 UL CA DC location**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **noted**.

##### 7.11.1.4 Switching period between case 1 and case 2 [NR\_RF\_FR1-Core]

**R4-2014464 DL interruption for band combinations supporting carrier switching**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **noted**.

**R4-2015195 CR to 38.101-1 Add requirement on the UL CA configurations with no DL interruption**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0533 Cat: F (Rel-16)  
  
 Source: China Telecom*

**Abstract:**

In RAN4 #96e, it was agreed in WF R4-2011731 that DL interruption is not allowed for some inter-band EN-DC and UL CA configurations. The exact EN-DC and UL CA configurations for which DL interruptions are not allowed will be captured in TS 38.101-1 and TS 38.101-3 respectively

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **revised to R4-2016818**.

**R4-2016818 CR to 38.101-1 Add requirement on the UL CA configurations with no DL interruption**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0533 rev 1 Cat: F (Rel-16)  
  
 Source: China Telecom*

(Replaces R4-2015195)

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **agreed**.

**R4-2015196 CR to 38.101-3: Add requirement on the inter-band EN-DC with no DL interruption**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0386 Cat: F (Rel-16)  
  
 Source: China Telecom*

**Abstract:**

In RAN4 #96e, it was agreed in WF R4-2011731 that DL interruption is not allowed for some inter-band EN-DC and UL CA configurations. The exact EN-DC and UL CA configurations for which DL interruptions are not allowed will be captured in TS 38.101-1 and TS 38.101-3 respectively

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **revised to R4-2016819**.

**R4-2016819 CR to 38.101-3: Add requirement on the inter-band EN-DC with no DL interruption**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0386 rev 1 Cat: F (Rel-16)  
  
 Source: China Telecom*

(Replaces R4-2015196)

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **agreed**.

**R4-2015975 Modification of Pcmax for UL CA with uplink Tx switching capability**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0553 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

For an inter-band UL CA configuration with UL TX switching (switching between carrier 1 and carrier 2), the maximum power on carrier 2 is boosted by 3 dB if the uplinkTxSwitchingPowerBoosting-r16 is enabled and the capability uplinkTxSwitching-PowerBoosting-r16 is supported by the UE. This is currently specified in clause 6.3A.3.3 on the transmit ON/OFF time mask for inter-band CA, but should be specified in the clause on configured power (Pcmax) for CA. However, the Pcmax for UL CA does not allow 3 dB power boosting for the BC, the total power is capped by the default CA power class (PC3); a modification is needed.

The 38.331 specifies the conditions that apply when the uplinkTxSwitchingPowerBoosting-r16 is enabled (CellGroupConfig)

uplinkTxSwitchingPowerBoosting

Indicates whether the UE is allowed to enable 3dB boosting on the maximum output power for transmission on carrier2 under the operation state in which 2-port transmission can be supported on carrier2 for inter-band UL CA case with dynamic UL Tx switching as defined in TS 38.101-1 [15]. Network can only configure this field for dynamic UL Tx switching in inter-band UL CA case with power Class 3 as defined in TS 38.101-1 [15].

The UE behavior with uplinkTxSwitchingPowerBoosting enabled is governed by the 38.331, the 38.101-1 only specifies the associated maximum output power requirement that applies under the conditions cited above

**Discussion:**

See email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 in R4-2016614.

**Decision:** The document was **not pursued**.

#### 7.11.2 RRM core requirements maintenance (38.133) [NR\_RF\_FR1-Core]

**R4-2017016 Email discussion summary for [97e][217] NR\_RF\_FR1\_RRM**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][217] NR\_RF\_FR1\_RRM. The email thread was moderated by Jing Han (Huawei) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017287**.

**R4-2017287 Email discussion summary for [97e][217] NR\_RF\_FR1\_RRM**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2017016)

**Discussion:**

The contribution summarized email discussion thread [97e][217] NR\_RF\_FR1\_RRM. The email thread was moderated by Jing Han (Huawei) and treated during RRM session chaired by Andrey Chervyakov (Intel).

1st round email discussion conclusions

**Topic #2: Test case**

Issue 2-1-2: Whether MRTD is considered in test cases

Agreement

* No MRTD is set in the test.

Issue 2-1-3: SRS configuration in the special slot

Agreement

* SRS configuration refers to SRSConf.1 in Table A.4.4.1.1.1-3 in TS 38.133 except that:
  + resourceMappingstartPosition: 0
  + resourceMappingnrofSymbols: n2

Issue 2-2-1: TDD configuration

Agreement

* Carrier#2 TDD UL/DL pattern is 3D1S4U, S = 10DL: 2GP: 2UL

Issue 2-2-2: Which symbol to be verified?

Agreement

* symbol #4 or symbol#5 or symbol #8 on the special slot on NR TDD carrier depending on UE capability *uplinkTxSwitchingPeriod*
* symbol level DL interruption can’t be verified in LTE

Issue 2-3-1: TDD configuration

Agreement

* Carrier#2 TDD UL/DL pattern is 3D1S4U, S = 10DL: 2GP: 2UL

Issue 2-3-2: Which symbol to be verified?

Agreement

* For NR FDD carrier (Cell 1), this test verifies that the UE correctly receive the PDCCH scheduled on the symbol #8 or symbol #9 or symbol #10 in the second slot of every 4 slots (i.e., the slot overlapping with the special slot of the NR TDD carrier) depending on UE capability *uplinkTxSwitchingPeriod*
* For NR TDD carrier (Cell 2), this test verifies that the UE correctly receive the PDCCH scheduled on the symbol #4 or symbol #5 or symbol #8 on the special slot depending on UE capability *uplinkTxSwitchingPeriod*

Issue 2-4-1: TDD configuration

Agreement

* - Carrier#1 TDD UL/DL pattern is 3D1S4U, S = 10DL: 2GP: 2UL;
* - Carrier#2 TDD UL/DL pattern is 1D1S2U, S = 10DL: 2GP: 2UL

Issue 2-4-2: Which symbol to be verified?

Agreement

* For NR TDD PCell (Cell 1), this test verifies that the UE correctly receive the PDCCH scheduled on the symbol #4 or symbol #5 or symbol #8 on the special slot depending on UE capability uplinkTxSwitchingPeriod.
* For NR TDD SCell (Cell 2), this test verifies that the UE correctly receive the PDCCH scheduled on the symbol #4 or symbol #5 or symbol #8 on the 2nd special slot of every 8 slots depending on UE capability uplinkTxSwitchingPeriod.

GTW session (November 11, 2020)

Sub-topic 2-1: Principle and general parameters for test case

**Issue 2-1-1**: How to verify the symbol-level DL interruption in test

* Option 1: PDCCH is scheduled on the symbol right before the DL interruption. UE supports pdcch-MonitoringAnyOccasions or pdcch-MonitoringAnyOccasionsWithSpanGap.
* Option 2: PDCCH is scheduled in the first OFDM symbol, and PDSCH with mapping type A is scheduled from the second OFDM symbol to the symbol right before the DL interruption.
* Option 3: Triggering an aperiodic CSI-RS L1-RSRP reporting with CSI-RS resources (with boosted power) on the OFDM symbol right before the interruption, and check UE’s aperiodic L1-RSRP report with corresponding measurement accuracy.

Discussion:

MTK: Option 3

Agreement: Triggering an aperiodic CSI-RS L1-RSRP reporting with CSI-RS resources (with boosted power) on the OFDM symbol right before the interruption, and check UE’s aperiodic L1-RSRP report with corresponding measurement accuracy.

Sub-topic 2-4: Specific parameters for DL interruptions at switching between two uplink carriers in TDD-TDD CA (SA)

Issue 2-4-2: Which symbol to be verified?

*Background: it has reached consensus of the symbols to be verified as below*

* *For NR TDD PCell (Cell 1), this test verifies that the UE correctly receive the PDCCH scheduled on the symbol #4 or symbol #5 or symbol #8 on the special slot depending on UE capability uplinkTxSwitchingPeriod.*
* *For NR TDD SCell (Cell 2), this test verifies that the UE correctly receive the PDCCH scheduled on the symbol #4 or symbol #5 or symbol #8 on the 2nd special slot of every 8 slots depending on UE capability uplinkTxSwitchingPeriod.*

Some company raised a **new question**: Can this can only apply to combinations assuming simultaneous Rx-Tx?

       -Option 1: Yes

       - Option 2: No

Agreement: the test is applicable for UE supporting simultaneous Rx-Tx

**Decision:** The document was **noted**.

**R4-2014505 CR to TS 38.133: Add information on the inter-band EN-DC and UL CA configurations with no DL interruption**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1184 Cat: F (Rel-16)  
  
 Source: China Telecom*

**Abstract:**

In RAN4 #96e, it was agreed in WF R4-2011731 that DL interruption is not allowed for some inter-band EN-DC and UL CA configurations. The exact EN-DC and UL CA configurations for which DL interruptions are not allowed will be captured in TS 38.101-1 and TS 38.101-3 respectively, as seen in our companion CRs in R4-2015195/6.

Meanwhile, since the DL interruption requirements for Tx switching are specified in TS 38.133 and TS 36.133, it is proposed to add the related information to TS 38.133 and TS 36.133 as well.

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **agreed**.

**R4-2014506 CR to TS 36.133: Add information on the inter-band EN-DC configurations with no DL interruption**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6963 Cat: F (Rel-16)  
  
 Source: China Telecom*

**Abstract:**

In RAN4 #96e, it was agreed in WF R4-2011731 that DL interruption is not allowed for some inter-band EN-DC and UL CA configurations. The exact EN-DC and UL CA configurations for which DL interruptions are not allowed will be captured in TS 38.101-1 and TS 38.101-3 respectively, as seen in our companion CRs in R4-2015195/6.

Meanwhile, since the DL interruption requirements for Tx switching are specified in TS 38.133 and TS 36.133, it is proposed to add the related information to TS 38.133 and TS 36.133 as well.

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **agreed**.

**R4-2015488 Correction on DL interruption on Tx Switching between two uplink carriers**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1276 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The uplink switching mechanism in TS38.214 is captured in clause 6.1.6;

The interruption length due to uplink switching in NR SA for 210us switching period is not corrected implemented in the spec. (The DL interruption length was agreed in R4-2008623)

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **agreed**.

#### 7.11.3 RRM perf. requirements (38.133) [NR\_RF\_FR1-Perf]

**R4-2017173 WF on test case for DL interruption due to Tx switching between two uplink carriers**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **approved**.

**R4-2017172 Big CR: Introduction of Rel-16 NR FR1 RF WI RRM performance requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1410 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2014503 Discussion on test case for DL interruptions at UE switching between two uplink carriers**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **noted**.

**R4-2014504 Draft CR to TS 38.133: Test case for DL interruptions at UE switching between two uplink carriers in FDD+TDD inter-band CA case**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: China Telecom*

**Abstract:**

Test case for DL interruptions at UE switching between NR uplink carrier 1 and NR uplink carrier 2 in FDD+TDD inter-band uplink CA case shall be specified.

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **revised to R4-2017324**.

**R4-2017324 Draft CR to TS 38.133: Test case for DL interruptions at UE switching between two uplink carriers in FDD+TDD inter-band CA case**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: China Telecom*

(Replaces R4-2014504)

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **endorsed**.

##### 7.11.3.1 General [NR\_RF\_FR1-Perf]

##### 7.11.3.2 Test cases [NR\_RF\_FR1-Perf]

**R4-2014733 Discussion on test case on TX switching between two TDD uplink carriers**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **noted**.

**R4-2014734 Draft CR to TS 38.133: Test case for DL interruptions at UE switching between two uplink carriers in TDD+TDD inter-band CA case**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: CMCC*

**Abstract:**

Test case for DL interruptions at UE switching between NR uplink carrier 1 and NR uplink carrier 2 in TDD+TDD inter-band uplink CA case shall be specified.

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **revised to R4-2017325**.

**R4-2017325 Draft CR to TS 38.133: Test case for DL interruptions at UE switching between two uplink carriers in TDD+TDD inter-band CA case**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: CMCC*

(Replaces R4-2014734)

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **revised to R4-2017346**.

**R4-2017346 Draft CR to TS 38.133: Test case for DL interruptions at UE switching between two uplink carriers in TDD+TDD inter-band CA case**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: CMCC*

(Replaces R4-2017325)

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **endorsed**.

**R4-2015486 Discussion on test case on TX switching between two uplink carriers**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **noted**.

**R4-2015487 Test case for DL Interruptions at UE switching between LTE 1Tx carrier and NR 2Tx carrier in inter-band ENDC**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Test case for DL Interruptions at UE switching between LTE 1Tx carrier and NR 2Tx carrier in inter-band ENDC shall be specified

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **revised to R4-2017326**.

**R4-2017326 Test case for DL Interruptions at UE switching between LTE 1Tx carrier and NR 2Tx carrier in inter-band ENDC**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015487)

**Discussion:**

See email discussion summary for [97e][217] NR\_RF\_FR1\_RRM in R4-2017016.

**Decision:** The document was **endorsed**.

### 7.12 NR RF requirement enhancements for frequency range 2 (FR2) [NR\_RF\_FR2\_req\_enh]

#### 7.12.1 RF core requirements maintenance [NR\_RF\_FR2\_req\_enh-Core]

**R4-2016615 Email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4. The subject for discussion was core maintenance. The email thread was moderated by Petri Vasenkari (Nokia) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016957**.

**R4-2016957 Email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2016615)

**Discussion:**

The contribution summarized email discussion thread [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4. The subject for discussion was core maintenance. The email thread was moderated by Petri Vasenkari (Nokia) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016820 WF on Beam Correspondence based on configured DL RS (SSB or CSI-RS)**

*Type: other For: discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **approved**.

**R4-2016824 WF on addition of new frequency separation classes**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **noted**.

##### 7.12.1.1 Beam Correspondence based on configured DL RS (SSB or CSI-RS) [NR\_RF\_FR2\_req\_enh-Core]

**R4-2014320 Enhanced beam correspondence test applicability rules in rel-16**

*Type: other For: Approval  
 Source: LG Electronics France*

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **noted**.

**R4-2014512 REL16 eBC capability alingment with 38.306**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0270 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

RAN4 specifications is aligned with RAN2 specification. There is TBD in applicability clause.

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **revised to R4-2016821**.

**R4-2016821 REL16 eBC capability alingment with 38.306**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0270 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2014512)

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **agreed**.

**R4-2014584 On CSI-RS based beam correspondence**

*Type: discussion For: Approval  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **noted**.

**R4-2014722 Discussion on Rel-16 beam correspondence remaining issues**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **noted**.

**R4-2014923 Remaining issues with beam correspondence enhancement**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **noted**.

**R4-2014924 CR to TR 38.831 on beam correspondence corrections**

*Type: CR For: Agreement  
 38.831 v16.0.0 CR-0001 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

The Rel-16 beam correspondence requirement has the following remaining open issues: how to define the PSD difference X between SSB and CSI-RS for FG8-3; and how to define the applicability rule for the case when the UE supports both FG8-2 and FG8-3. This CR resolves the open issues and updates the feature description for beam correspondence.

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **revised to R4-2016822**.

**R4-2016822 CR to TR 38.831 on beam correspondence corrections**

*Type: CR For: Agreement  
 38.831 v16.0.0 CR-0001 rev 1 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

(Replaces R4-2014924)

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **agreed**.

**R4-2015344 Discussion on Rel-16 BC**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **noted**.

**R4-2015808 Remaining issues in beam correspondence**

*Type: other For: Approval  
 Source: Sony, Ericsson*

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **noted**.

**R4-2016518 CR on beam correspondence side condition**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0301 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Side condition for CSI-RS based beam correspondence is not defined.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **revised to R4-2016823**.

**R4-2016823 CR on beam correspondence side condition**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0301 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016518)

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **not pursued**.

##### 7.12.1.2 Others [NR\_RF\_FR2\_req\_enh-Core]

**R4-2014290 Inter-band + intra-band CA FR2 frequency separation class**

*Type: discussion For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **noted**.

**R4-2014581 CR to 38.101-2 (Rel-16) inter-band DL CA**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0271 Cat: F (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

For inter-band DL CA, the current REFSENS and EIS spherical coverage requirements have brackets. Our analysis shows the requirements within brackets are achievable.

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **revised to R4-2016825**.

**R4-2016825 CR to 38.101-2 (Rel-16) inter-band DL CA**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0271 rev 1 Cat: F (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2014581)

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **agreed**.

**R4-2014585 Rel-16 Inter-band DL CA requirements**

*Type: discussion For: Approval  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **noted**.

**R4-2014597 Clarification of EIS spherical coverage for inter-band CA**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0272 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

EIS spherical coverage requirement for inter-band CA is incomplete. The actual ‘common area’ requirement is missing in the requirement sub-clause.

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **revised to R4-2016826**.

**R4-2016826 Clarification of EIS spherical coverage for inter-band CA**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0272 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2014597)

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **agreed**.

**R4-2014932 CR for PSD imbalance for FR2 DL inter-band CA**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0281 Cat: F (Rel-16)  
  
 Source: NTT DOCOMO INC.*

**Abstract:**

To ensure the DL performance of IBM UE supporting FR2 inter-band CA under non-colocated deployment

There were contribtuions mentioning that it is needed to take care aobut RF design to handle PSD imbalance for FR2 DL inter-band CA, therefore it is meaningful to ensure the performance in Rx requirements.

It was agreed that IBE UE(s) are assumed to be operated under non-colocated deplyment in R4-2005736.

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **not pursued**.

**R4-2015088 CR to TR 38.831 to include DL CA agreement**

*Type: CR For: Agreement  
 38.831 v16.0.0 CR-0002 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The secretary commented that the CR is missing coversheet. See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **revised to R4-2016827**.

**R4-2016827 CR to TR 38.831 to include DL CA agreement**

*Type: CR For: Agreement  
 38.831 v16.0.0 CR-0002 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015088)

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **agreed**.

**R4-2015343 Discussion on Rel-16 FR2 inter-band DL CA**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **noted**.

**R4-2016519 CR for inter-band NC DL CA Rrefsens**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0302 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For UE supporting CA configuration, ΔRIB is also applied for Single carrier requirement. There is no clarification in the spec.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **revised to R4-2016828**.

**R4-2016828 CR for inter-band NC DL CA Rrefsens**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0302 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016519)

**Discussion:**

See email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 in R4-2016615.

**Decision:** The document was **not pursued**.

#### 7.12.2 RRM core requirements maintenance (38.133) [NR\_RF\_FR2\_req\_enh-Core]

### 7.13 NR RRM requirement enhancement [NR\_RRM\_Enh-Core]

**R4-2017017 Email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Intel Corporation)*

**Discussion:**

The contribution summarized email discussion thread [97e][218] NR\_RRM\_Enh\_RRM\_1. The email thread was moderated by Hua Li (Intel China Ltd.) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017288**.

**R4-2017288 Email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Intel Corporation)*

(Replaces R4-2017017)

**Discussion:**

The contribution summarized email discussion thread [97e][218] NR\_RRM\_Enh\_RRM\_1. The email thread was moderated by Hua Li (Intel China Ltd.) and treated during RRM session chaired by Andrey Chervyakov (Intel).

1st round email discussion conclusions

**Topic #4: BWP Switching on multiple CCs in performance part**

Number of CCs undergoing multiple BWP switching

Agreement: Option 1: 2

Test duplication for EN-DC and SA

Agreement: Option 1: Duplicated. Further discuss about applicable rule

Interruption test is needed or not

Agreement: option 1

* + Test interruption requirements along with delay requirements in one test

Cell configuration with or w/o interruption test

Agreement: for EN-DC, option 1 is agreed.

Whether DCI+Timer based simultaneous BWP switch switching can be applied in one test

Agreement: Option 1.

* + Both DCI+Timer based BWP switch can be tested in one testcase

Whether define test for Cross-carrier scheduling based Simultaneous BWP switching

Agreement: Option 1.

* + Only define self-scheduling based test cases in NR\_RRM\_enh.

**Topic #5: UL Spatial Relation Info Switching in performance part**

Testcase list for UL spatial relation info switch

Agreement:

|  |
| --- |
| TC1: MAC-CE based spatial relation switch associated with a known DL-RS in EN-DC for PUCCH |
| TC2: RRC based spatial relation switch associated with a known DL-RS in EN-DC for periodic SRS |
| TC3: MAC-CE based spatial relation switch associated with a known DL-RS in SA for PUCCH |
| TC4: RRC based spatial relation switch associated with a known DL-RS in SA for periodic SRS |

GTW session (November 09, 2020)

**Topic #1: BWP Switching on multiple CCs in core part**

Issue 1-1-1: Scenario for simultaneous RRC based BWP switch on multiple CCs

* Option 1 (Intel):
  + Simultaneous RRC based BWP switch can’t be applied for case 1. Clarify if case 2 can be applied simultaneously.
  + If both case 1 and case 2 can’t be applied simultaneously, the delay requirement about simultaneous RRC based BWP switch on multiple CCs will be removed.
  + Further discuss whether new delay requirement needs to be defined for case 1 and case 2.
* Option 2 (MTK):
  + There is no RRC-based simultaneous BWP switch for multiple CCs.
  + There is only PCell + PSCell for RRC-based partially overlapped BWP switch.
* Option 3 (Huawei, Ericsson, NEC):
  + It is feasible to change parameters of the active BWP without changing the active BWP ID for an SCell. The simultaneous BWP switch on multiple CCs triggered by RRC is feasible when any other parameters of the same active BWP is changed for the involved the SCells
* Option 4 (Apple, Intel, MTK, vivo):
  + LS to RAN2 to further clarify if there is no consensus in RAN4.
* Option 5 (ZTE):
  + From RAN4 perspective, we see the benefit to have RRC based BWP switching be applicable for SCell either that BWP switch delay can be reduced. So if RAN4 can reach agreements on this part then we can send LS to RAN2 and let RAN2 know the merit of having such mechanism.
* Option 6 (Nokia):
  + In R16, we have direct Scell activation by RRC, hence RRC-based BWP switch could be performed for all cells. Therefore, Current simultaneous RRC-based BWP switch for multiple CCs is valid.
* Recommended WF:
  + Further discussion. If no consensus is achieved, sending LS to RAN2 to further clarify.

Discussion

Intel: We can wait for Rel-15 conclusions on the relevant topic in thread [201]

Apple: also prefer to wait for Rel-15 conclusions. We also would like to clarify that the requirements are limited to Rel-15 BWP switching only.

Chair: wait for conclusions in [201]

**Topic #2: UL Spatial Relation Info Switching in core part**

Issue 2-1-1: When the UL signal has spatial relation to an unknown DL RS

* Option 1 (NTT Docomo, Qualcomm, Intel): Do not define requirements
* Option 2 (Huawei, vivo, Qualcomm, Intel): is not a typical configuration
* Option 3 (Apple, MTK, Ericsson, ZTE, Nokia): Define requirements

Issue 2-1-3: Delay requirement for unknown spatial relation

* Option 1:
  + For MAC-CE based: THARQ + 3ms + TL1-RSRP.
  + For RRC based: TRRC-processing + TL1-RSRP

Discussion:

QC: For 2-1-1 Option 1 is the consequence of Option 2.

Nokia: Agree that this is not a typical case. What we want to clarify is that UE shall not transmit before it acquires the timing.

Apple: When UE shall start transmission? Do not need additional time for timing acquisition and think that UE needs to detect the beam

MTK: This is similar to TCI state switching where we already defined requirements for unknown case. We admit that this may not be a typical configuration.

Apple: Agree that we already defined similar requirements.

HW: this is not a typical configuration. Can compromise to Option 3 under condition there is no test.

ZTE: At least the requirements need to be specified. For TC we may have a separate discussion.

Intel: Not typical. Can compromise to Option 3.

Agreement:

Define requirements for the case when the UL signal has spatial relation to an unknown DL RS

* For MAC-CE based: THARQ + 3ms + TL1-RSRP.
* For RRC based: TRRC-processing + TL1-RSRP

Do not define any test cases for this scenario

**Topic #4: BWP Switching on multiple CCs in performance part**

Issue 4-1-2: CC combinations for simultaneous BWP switch

* Option 1(Apple, Intel, Qualcomm, vivo, Qualcomm):
  + FR1+FR1
  + FR2+FR2
* Option 2 (MTK, Huawei, Ericsson, Nokia):
  + FR1+FR1
  + FR1+FR2
  + FR2+FR2

Discussion:

E///: Some non-simultaneous switching scenarios apply for FR1+FR2

Apple: We prefer to define requirements for the simultaneous case only for FR

Intel: this issue is for simultaneous BWP switch

QC: Option 1. Do not need to test non- simultaneous

MTK: Need to test simultaneous FR1+FR2

Nokia: For simultaneous case we are ok with Option 2. FR1+FR2 is needed for non-simultaneous

HW: we share same view as MTK

QC: for FR1+FR2 we have different SCS

Agreement

Define test cases for

FR1+FR1 simultaneous BWP switch

FR2+FR2 simultaneous BWP switch

FFS: FR1+FR2 simultaneous BWP switch

FFS: FR1+FR2 non-simultaneous BWP switch

Note 1: the agreement applies for DCI/Timer based switching. For RRC based switching further discussion shall take place whether it is feasible to have simultaneous BWP switch.

Note 2: Feasibility of FR1+FR2 testing shall be addressed

GTW session (November 12, 2020)

CC combinations for simultaneous BWP switch performance requirements

* Proposals:
  + Option 1(Apple, Qualcomm, Intel):
    - FR1+FR1
    - FR2+FR2
  + Option 2 (MTK, Huawei, Ericsson, vivo, Intel, Nokia):
    - FR1+FR1
    - FR1+FR2
    - FR2+FR2
* Discussion
  + QC: prefer to further check on FR1+FR2. It can be a corner case.
  + MTK: Is it ok to have FR1+FR2 for non-simultaneous BWP switching case
    - QC: non-simultaneous is ok
  + VzW: FR1+FR2 is a practical case. Focus on non-simultaneous case first and then on simultaneous case.
  + Apple: Option 1. Need to further check.
* Agreement
  + Define test cases for
    - FR1+FR1 simultaneous BWP switch
    - FR2+FR2 simultaneous BWP switch
    - FFS: FR1+FR2 simultaneous BWP switch
    - FFS: FR1+FR2 non-simultaneous BWP switch
    - Note 1: the agreement applies for DCI/Timer based switching. For RRC based switching further discussion shall take place whether it is feasible to have simultaneous BWP switch.
    - Note 2: Feasibility of FR1+FR2 testing shall be addressed

**Decision:** The document was **noted**.

**R4-2017018 Email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (ZTE Corporation)*

**Discussion:**

The contribution summarized email discussion thread [97e][219] NR\_RRM\_Enh\_RRM\_2. The email thread was moderated by Qian Yang (ZTE) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017289**.

**R4-2017289 Email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (ZTE Corporation)*

(Replaces R4-2017018)

**Discussion:**

The contribution summarized email discussion thread [97e][219] NR\_RRM\_Enh\_RRM\_2. The email thread was moderated by Qian Yang (ZTE) and treated during RRM session chaired by Andrey Chervyakov (Intel).

1st round email discussion conclusions

**Topic #1: SRS carrier switching requirements**

Sub-topic #1-1 RRM core requirements maintenance Tentative agreements:

Agreements: Introduce requirements in TS 36.133 for interruption on LTE victim cell for LTE SRS carrier based switching under EN-DC and NE-DC

Sub-topic #1-1: RRM test cases

Agreements: Do not define delay test cases for SRS carrier-based switching for NR deployments, similar to LTE.

**Topic #2: CGI reading requirements with autonomous gap**

Sub-topic #2-1: RRM test cases

Agreements

Requirements for both CGI reading delay, and interruptions to serving cell during CGI reading should be verified by the same tests

Test requirement for interruption during CGI reading should be defined by counting number of total missed ACK/NACKs during the CGI reading procedure.

20ms NR SMTC periodicity is used in the test

**Topic #3: Mandatory gap pattern**

Sub-topic #3-1: RRM test cases

Agreements: Use existing tests for inter frequency measurement without SSB index detection and with no DRX as baseline

GTW session (November 09, 2020)

**SRS carrier based switching**

Issue 1-2-1: Scenarios for NR SRS carrier based switching tests

* Option 1 (ZTE, Huawei, Qualcomm, MediaTek, Apple, Nokia)
  + Tests are specified for SA and EN-DC
* Option 2 (Ericsson)
  + Tests are specified for SA, NR-DC, NE-DC and EN-DC

Discussion:

E///: we prefer to have different combinations of FR1 and FR2. Do we consider different combinations for SA? For NE-DC we wanted to verify impact on NR cells.

QC: For EN-DC we verify both LTE and NR carriers interruptions.

ZTE: there are no NE-DC tests under current specification. The general principle is that EN-DC tests can verify corresponding functionality.

OPPO: same view

E///: to ZTE this is a new feature and this can justify new test cases.

ZTE: for FR1+FR2 we need to check the feasibility of such tests

Agreements

* + For NR SRS carrier based switching define tests for SA and EN-DC
    - For EN-DC the interruptions for LTE and NR carriers are tested.
    - For SA the following combinations are tested
      * FR1 CA
      * FR2 CA
      * FFS: FR1+FR2 CA with SRS switching within same FR
      * FFS: FR1+FR2 CA with SRS switching between different FRs

Issue 1-2-2: Scenarios for E-UTRA SRS carrier based switching tests

* Option 1 (ZTE, Huawei, Qualcomm, MediaTek, Apple, Nokia)
  + Tests are specified for EN-DC
* Option 2 (Ericsson)
  + Tests are specified for NE-DC and EN-DC
  + Agreement: For E-UTRA SRS carrier based switching define tests for EN-DC

Issue 1-2-7: Whether to introduce following test cases in TS 36.133

* Option 1 (Ericsson)
  + In TS 36.133, RAN4 to define the interruption tests cases for SRS carrier-based switching for the following scenarios
    - NR SRS carrier-based switching impacting E-UTRA cells in SCG in EN-DC
    - NR SRS carrier-based switching impacting E-UTRA cells in MCG in NE-DC
* Option 2 (Huawei, Qualcomm, Apple, ZTE, Nokia)
  + All the tests are captured in TS 38.133

Agreement: Capture all test cases in TS 38.133

**CGI reading**

Issue 2-1-1: Test cases for CGI reading in LTE SA

* Option 1 (Ericsson)
  + Test 1a: NR CGI reading in LTE SA, FR1 target cell
  + Test 1b: NR CGI reading in LTE SA, FR2 target cell
* Option 2 (Huawei, Qualcomm, MediaTek, Apple, ZTE, Nokia)
  + No test if test 6a/6b is introduced.

Agreement: Do not define Test cases for CGI reading in LTE SA

Issue 2-1-2: Test cases for CGI reading in NR SA

* Option 1 (Ericsson)
  + Test 2a: LTE CGI reading in NR SA, FR1 PCell
  + Test 2b : LTE CGI reading in NR SA, FR2 PCell
  + Test 3a: NR intra-frequency CGI reading in NR SA, FR1 PCell and FR1 target cell
  + Test 3b: NR intra-frequency CGI reading in NR SA, FR2 PCell and FR2 target cell
  + Test 4a: NR inter-frequency CGI reading in NR SA, FR1 PCell and FR1 target cell
  + Test 4b: NR inter-frequency CGI reading in NR SA, FR2 PCell and FR2 target cell
* Option 2 (ZTE, Huawei, Qualcomm, MediaTek, Apple, Nokia)
  + Test 2a: LTE CGI reading in NR SA, FR1 PCell
  + Test 3a: NR intra-frequency CGI reading in NR SA, FR1 PCell and FR1 target cell
  + Test 4b: NR inter-frequency CGI reading in NR SA, FR2 PCell and FR2 target cell

Agreement: Test cases for CGI reading in NR SA

* + Test 2a: LTE CGI reading in NR SA, FR1 PCell
  + Test 3a: NR intra-frequency CGI reading in NR SA, FR1 PCell and FR1 target cell
  + Test 4b: NR inter-frequency CGI reading in NR SA, FR2 PCell and FR2 target cell

Issue 2-1-3: Test cases for CGI reading in EN-DC

* Option 1 (Ericsson)
  + Test 5a: NR intra-frequency CGI reading in EN-DC, FR1 PSCell and FR1 target cell
  + Test 5b: NR intra-frequency CGI reading in EN-DC, FR2 PSCell and FR2 target cell
  + Test 6a: NR inter-frequency CGI reading in EN-DC, FR1 PSCell and FR1 target cell
  + Test 6b: NR inter-frequency CGI reading in EN-DC, FR2 PSCell and FR2 target cell
* Option 2 (ZTE, Huawei, Qualcomm, MediaTek, Apple, Nokia)
  + Test 5a: NR intra-frequency CGI reading in EN-DC, FR1 PSCell and FR1 target cell
  + Test 6b: NR inter-frequency CGI reading in EN-DC, FR2 PSCell and FR2 target cell

Agreement: Test cases for CGI reading in EN-DC

* + Test 5a: NR intra-frequency CGI reading in EN-DC, FR1 PSCell and FR1 target cell
  + Test 6b: NR inter-frequency CGI reading in EN-DC, FR2 PSCell and FR2 target cell

Issue 2-1-5a: How to calculate missed ACK/NACK during CGI reading

* Option 1: Missed ACK/NACK is tested based on total allowed interruption during entire CGI reading, with the total number
  + Option 1a: number of interrupted slots + K1
  + Option 1b: 2 \* number of interrupted slots
  + Option 1c: FFS

Discussion:

MTK: Either 1a or 1b can work depending on HARQ configuration in the test and we can come back

QC: we proposed 1a and are ok with 1c

E///: Agree with MTK

Apple: need to consider UL as well.

Issue 2-1-6a: Test configuration for SI-RNTI scheduling periodicity

* Option 1: 20ms
* Option 2: 40ms
* Option 3: 160ms

Discussion:

E///: Originally proposed 160ms. 40ms can be considered as a compromise

QC: Prefer Option 1 to reduce test time. Do not have strong concerns on 40ms

Apple, Huawei, MTK: Same view as QC

E///: SIB decoding has limited impact on testing time for 20ms and 40ms.

QC: this is true for FR2 but there can be saving for FR1

Agreement:

Test configuration for SI-RNTI scheduling periodicity

FR1: 20ms

FR2: 40ms

**Mandatory gap pattern**

Issue 3-1-1: Test scope and applicability

* Option 1 (CMCC, ZTE, Nokia)
  + Introduce test cases only for some of the new mandatory gap patterns, i.e. #2 and #17.
  + Rel-16 UE needs to pass both release 15 and release 16 tests
* Option 2
  + All release 16 and later on UE are required to be tested under new test cases, in which new mandatory measurement gap patterns are configured (#2, #3 and #11 for FR1, #17, #18 and #19 for FR2 if supported)
  + If the new introduced test case is to verify the same RRM requirement as some existing test case in which measurement gap pattern #0 or #13 is used, then UE is only required to pass the test in which new mandatory gap pattern is configured (#2, #3, #11, #17, #18 or #19)
* Option 3 (Qualcomm, Apple, MediaTek, Huawei)
  + Gap pattern 2 and 17 can be added to new release 16 tests
  + If UE passes new release 16 test, the same test (with different gap pattern and SMTC) in release 15 can be skipped.
* Option 4 (Ericsson, Nokia)
  + Additional testing is performed using mandatory measurement gap patterns 2, 3, 11, 17, 18, and 19 in NR SA mode with an NR target cell
* Option 1a (Moderator) New
  + Introduce test cases only for some of the new mandatory gap patterns, i.e. #2 for per-UE gap capable UE and #11 for per-FR gap capable UE in FR1 and #17 in FR2.
  + Rel-16 UE needs to pass both release 15 and release 16 tests

Discussion:

Apple: We do not propose to change anything on Rel-15. Define new Rel-16 tests. UE can skip some of the release 15 tests.

QC: for first bullet Option 3 or 1a are fine. For the 2nd bullet – we prefer to allow UE to skip some Rel-15 tests. Our RAN5 colleagues indicated that such approach is ok.

E///: This is a new way of doing testing.

Agreement:

* Introduce test cases only for some of the new mandatory gap patterns
  + [#2] for per-UE gap capable UE in FR1
  + [#11] for per-FR gap capable UE in FR1
  + #17 in FR2
* FFS if Rel-16 UE is allowed to skip some of the Rel-15 tests

GTW session (November 12, 2020)

CR handling

E///: have some concerns on CRs for SRS carrier switching (SRS configuration). Would like to further check the NR parameters. For EUTRA case we are ok to endorse.

QC: does E/// have any concern on specific configurations. Can we put SRS configurations in []?

ZTE: important to endorse the CRs

E///: [] does not work for us. It is also challenging to isolate the parameters from the test cases.

Agreement: SRS configurations for NR SRS carrier-based switching test cases

|  |  |  |
| --- | --- | --- |
| Field | Value | Comment |
| c-SRS | [12] for 10MHz CBW  [24] for 40MHz CBW  [17] for 100MHz CBW | Frequency hopping is disabled |
| b-SRS | [0] |  |
| b-hop | [0] |  |
| freqDomainPosition | [0] | Frequency domain position of SRS |
| freqDomainShift | [0] |  |
| groupOrSequenceHopping | [neither] | No group or sequence hopping |
| pathlossReferenceRS | [ssb-Index=0] | SSB #0 is used for SRS path loss estimation |
| usage | [Codebook] | Codebook based UL transmission |
| startPosition | [0] | resourceMapping setting. SRS on last |
| nrofSymbols | TBD | TBD |
| repetitionFactor | [n1] | without repetition. |
| combOffset-n2 | TBD | transmissionComb setting |
| cyclicShift-n2 | [0] |  |
| nrofSRS-Ports | [port1] | Number of antenna ports used for SRS transmission |
| transmissionComb | TBD |  |
| resourceType | [Periodic] |  |
| periodicityAndOffset-p | TBD | TBD |
| Note: For further information see clause 6.3.2 in TS 38.331 [2]. | | |

Note: General UL configuration parameters for the tests can be impacted based on agreed SRS configurations

**Decision:** The document was **noted**.

**R4-2017019 Email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The email thread was moderated by Jerry Cui (Apple) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017290**.

**R4-2017290 Email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2017019)

**Discussion:**

The contribution summarized email discussion thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The email thread was moderated by Jerry Cui (Apple) and treated during RRM session chaired by Andrey Chervyakov (Intel).

1st round email discussion conclusions

**Topic #1: Inter-band CA requirement for FR2 UE measurement capability of independent Rx beam and/or common beam (7.13.1.5)**

Issue 1-1: Necessity of SCell activation requirement with existing serving cell on same FR2 band

Agreement: Not necessary to specify the requirements for ‘SCell being activated belongs to FR2 and there is an active serving cell on that FR2 band and the PCell or PSCell is in FR2 and the PCell or PSCell and SCell being activated are in a band pair with independent beam management’

**Topic #4: UE-specific CBW change maintenance (7.13.1.6)**

Issue 4-1: UE behavior for Tx/Rx during CBW change delay

Agreement: The UE is not required to transmit UL signals or receive DL signals during the time defined by on the cell where UE-specific CBW change occurs.



**Topic #6: TCs of Inter-frequency measurement requirement without MG (7.13.2.2.5)**

Issue 6-1: TC list for inter-frequency measurement requirement without MG

Agreement

* TC list for R16 inter-frequency measurement without MG.

|  |  |
| --- | --- |
| **TC** | Company |
| TC1: SA event triggered reporting tests for FR1 without gap when DRX is not used (A.6.6.2.X) | CMCC |
| TC2: SA event triggered reporting tests for FR1 when DRX is used (A.6.6.2.X) | Apple |
| TC3: SA event triggered reporting tests for FR2 without gap when DRX is not used (A.7.6.2.X) | Huawei |
| TC4: SA event triggered reporting tests for FR2 without gap when DRX is used (A.7.6.2.X) | Mediatek |
| Note: existing TCs only consider test cases without SSB time index detection | |

Issue 6-2-1: MG configuration in TCs

Agreement: Do not configure gap in inter-frequency measurement without MG tests.

**Topic #7: TCs of UE-specific CBW change (7.13.2.2.7)**

Issue 7-1-1: TC list for UE-specific CBW change

Agreement

|  |  |
| --- | --- |
| **Test case list for UE specific CBW change** | **TC parameters** |
| TC1: UE specific CBW change on FR1 NR PSCell with non-DRX in synchronous EN- DC (A.4.5.x) | * *offsetToCarrier* is changed for TC of UE specific CBW change, while *carrierBandwidth* is unchanged in this TC (same as RF channel BW defined in each test)*.* * Reuse the parameters as much as possible from TC of RRC based BWP switching except the BWP switching parameters. |

Issue 7-1-2: new section for CBW configuration

Agreement: add the following generic section into TS38.133

Table A.3.x.1-1: DL CBW patterns for UE specific CBW configuration

|  |  |  |  |
| --- | --- | --- | --- |
| BWP Parameters | Unit | Values | |
| Reference CBW |  | DLCBW.1.1 | DLCBW.1.2 |
| OffsetToCarrier | RB | 0 | RBx Note 1 |
| carrierBandwidth | RB | Same as RF channel defined in each test | Same as RF channel defined in each test |
| Note 1: RBx is offset in frequency domain between Point A (lowest subcarrier of common RB 0) and the lowest usable subcarrier on this carrier. Note that RBx has to be within the CBW of BS. | | | |

**Topic #8: TCs of Inter-band CA requirement for FR2 UE measurement capability of independent Rx beam (7.13.2.2.9)**

Issue 8-2: TC configurations for inter-band CA requirement for FR2 UE measurement capability of independent Rx beam

Agreement:

* For SCell activation and deactivation delay test in FR2 inter-band CA, it is suggested that the test consists of three time period. (add a note to clarify that bands 1 and 2 are inter-band CA operating bands in FR2 as specified in Table 5.2A.2-1 in TS38.101-2)
  + Before the test starts, the UE is connected to Cell 1 (PCell) on FR2 band 1.
  + At the beginning of T1, the UE receives an RRC message to add Cell 2 as SCell on FR2 band 2. The time duration T1 is the preparation period for the test.
  + At the beginning of T2, the UE receives a MAC message for SCell activation. During time duration T2, the SCell activation delay and interruptions to PCell need to be tested.
  + At the beginning of T3, the UE receives a MAC message for SCell deactivation. During time duration T3, the SCell deactivation delay and interruptions to PCell need to be tested.

**Topic #9: feature list of NR RRM requirement enhancement (9-8/9-9/9-10) from thread #117**

GTW session (November 09, 2020)

**Core maintenance**

Issue 1-2: Beam management resources for IBM UE

* Option 1 (QC, Apple, MTK, Intel): IBM UEs shall be able to add/configure/activate cells on both FR2 inter-band CCs only when beam management resources are configured in the both bands irrespective of network deployment, e.g. collocated vs. non-collocated

Discussion:

Nokia: we would like to clarify what this means

Agreement: IBM UEs shall be able to add/configure/activate cells on both FR2 inter-band CCs only when beam management resources are configured in the both bands

Issue 2-1: Tx beam assumption of FR1 intra-band contiguous CA (this is important issue to discuss and it would be the basis for other discussion for multiple Scell activation)

* Option 1 (MTK): The network should guarantee the transmitted signals from Scells have the same downlink spatial domain transmission filter on one OFDM symbol in intra-band FR1.
* Option 1a (Apple): The network should guarantee the transmitted signals from Scells have the same downlink spatial domain transmission filter on one OFDM symbol in intra-band contiguous FR1.
* Option 2 (Huawei, ZTE, Nokia): Common Tx beam for FR1 intra-band contiguous CA should not be taken as a generic assumption for all RRM requirements
* Option 3 (Qualcomm, Ericsson): RAN4 to revisit one of conditions for multiple SCell activation requirement for FR1 contiguous CA, and update it as follows:
  + Replace “its SSB DL Tx beam is same as the corresponding SSB DL Tx beam at the same SSB position of contiguous FR1 known cell or contiguous FR1 active serving cell” with “its MRTD with contiguous FR1 known cell or contiguous FR1 active serving cell is smaller than or equal to CP duration with respect to the to-be-activated SCell’s SSB numerology”
  + Replace “its SSB DL Tx beam is different as the corresponding SSB DL Tx beam at the same SSB position of contiguous FR1 known cell or contiguous FR1 active serving cell” with “its MRTD with contiguous FR1 known cell or contiguous FR1 active serving cell is larger than CP duration with respect to the to-be-activated SCell’s SSB numerology”
* Option 3a (MTK, Apple, QC): RAN4 to revisit one of conditions for multiple SCell activation requirement for FR1 contiguous CA, and update it as follows:
  + Replace
    - “its SSB DL Tx beam is same as the corresponding SSB DL Tx beam at the same SSB position of contiguous FR1 known cell or contiguous FR1 active serving cell” with
    - “its RTD with contiguous FR1 known cell or contiguous FR1 active serving cell is smaller than or equal to CP duration with respect to the to-be-activated SCell’s SSB numerology and its reception power difference with contiguous FR1 known cell or contiguous FR1 active serving cell is smaller than or equal to XdB”, X is FFS.
  + Replace
    - “its SSB DL Tx beam is different as the corresponding SSB DL Tx beam at the same SSB position of contiguous FR1 known cell or contiguous FR1 active serving cell” with
    - “its RTD with contiguous FR1 known cell or contiguous FR1 active serving cell is larger than CP duration with respect to the to-be-activated SCell’s SSB numerology or its reception power difference with contiguous FR1 known cell or contiguous FR1 active serving cell is larger than XdB”, X is FFS.

Discussion

E///: We are ok with Option 3a. X needs further discussion. X = 6 dB is ok for us. It gives more flexibility to the NW.

Apple: we need to further check whether 6dB is ok. Also suggest to keep the current SSB side condition of -2 dB.

Nokia: Does the SSB position refer to the same SSB index? For power difference should it be discussed in RF?

Apple: Same SSB index shall be assumed. For power difference – this is related to RRM discussion.

Nokia: We are ok to specify RTD conditions but prefer not to define relative power

Apple: we can further study the exact values. It is important to consider relative power since different beams have different power.

Huawei: can we put CP into []?

MTK: Same view with Apple. Relative power shall be in the scope. In case of large imbalance there may be AGC issues.

MTK: this can be extended to the generic requirements

Agreement

RAN4 to revisit one of conditions for multiple SCell activation requirement for FR1 contiguous CA, and update it as follows:

* + 1) Replace
    - “its SSB DL Tx beam is same as the corresponding SSB DL Tx beam at the same SSB position of contiguous FR1 known cell or contiguous FR1 active serving cell” with
    - “its RTD with contiguous FR1 known cell or contiguous FR1 active serving cell is smaller than or equal to [CP duration] with respect to the to-be-activated SCell’s SSB numerology and its reception power difference with contiguous FR1 known cell or contiguous FR1 active serving cell is smaller than or equal to XdB”, X is FFS.
  + 2) Replace
    - “its SSB DL Tx beam is different as the corresponding SSB DL Tx beam at the same SSB position of contiguous FR1 known cell or contiguous FR1 active serving cell” with
    - “its RTD with contiguous FR1 known cell or contiguous FR1 active serving cell is larger than [CP duration] with respect to the to-be-activated SCell’s SSB numerology or its reception power difference with contiguous FR1 known cell or contiguous FR1 active serving cell is larger than XdB”, X is FFS.

Issue 2-2-1: Extend the assumption in FR1 multiple SCells activation to single FR1 SCell activation (first meeting for discussing)

* Option 1 (HW, Ericsson, Apple, ZTE, Nokia):
  + Extend the UE requirement (to skip cell detection for unknown FR1 SCell that is intra-band contiguous to active serving cell) to single SCell activation, from Rel-16 onwards.
* Option 2 (MTK, QC):
  + FFS on option 1.

Discussion:

MTK: this depends on the conclusions for issue 2-1 (RTD and power imbalance)

E///: not clear how is it relevant to 2-1?

HW: same view as E///. These issues are not related.

MTK: Single CC case is inherited from Rel-15. We need to check if it can work for the new Rel-16 conditions.

Issue 2-2-2: Requirement applicability on the other being-activated SCells during the FR1 multiple SCells activation (first meeting for discussing)

* Option 1 (Huawei, Ericsson, Apple, QC, ZTE):
  + No requirement applies for other being-activated SCells, if no requirements apply for any of the FR1 unknown SCell activated with the same MAC CE
* Note: Moderator reworded the proposal by adding “being-activated”.
* Option 2 (MTK, Nokia):
  + FFS on option 1.

Issue 2-2-3: Condition of SMTC configuration to apply multiple SCell activation requirement (first meeting for discussing)

* Option 1 (Huawei, Apple, MTK, QC):
  + Multiple SCell activation requirements apply provided that SMTC offset and periodicity is same for all SCells activated by the same MAC CE
* Option 2 (Ericsson, Nokia):
  + Disagree with option 1.

Issue 3-1: Power imbalance condition for inter-frequency without MG (first meeting for discussing)

* Option 1 (Huawei, QC): The power imbalance between serving frequency layer and inter-frequency layer on which UE performs without gap shall be within [6]dB
* Option 2 (MTK, Intel): In the test case of inter-frequency measurement without MG, the power imbalance between serving frequency layer and inter-frequency layer on which UE performs without gap shall be within [6]dB.
* Option 3 (Ericsson, Apple, ZTE): such power imbalance limitation in option 1 is not needed

**Testing**

Issue 6-2-2: SSB time index detection in TCs

* Option 1 (CMCC, Ericsson, Huawei, QC)
  + It is proposed that RAN4 further discuss whether to introduce test case with SSB time index detection. The proposed alternatives are:
    - Alt1: TC1 FDD is without SSB time index detection, TC2 FDD is with SSB time index detection
    - Other alternatives are not precluded.
* Option 2 (Apple, MTK)
  + Prefer to not test SSB index detection for inter-frequency measurement without MG test cases.

Discussion:

QC: Option 2 is fine for us as well

Apple: the main purpose is to check if UE can make detection without gap. We can compromise to Option 1.

MTK: we already have Rel-15 tests with SSB time index detection. Rel-16 UE already passed such tests.

CMCC: Option 1 is a good compromise. Not increase test number and have good test coverage. In practical networks SSB index detection is needed and should be tested.

Agreement:

* TC1 FDD is without SSB time index detection
* TC2 FDD is with SSB time index detection
* TDD tests are defined without SSB time index detection

Issue 6-2-3: DRX cycle setup in TCs

* Option 1: TC2 tests one DRX cycle only and TC4 tests one DRX cycle only. The DRX cycle in TC2 and TC4 can be different.
* Option 2: TC2 tests two DRX cycles and TC4 tests two DRX cycles.

Discussion:

Apple: Option 1 is more practical.

QC: Option 1

CMCC: Option 1

Agreement: TC2 tests one DRX cycle only and TC4 tests one DRX cycle only. The DRX cycle in TC2 and TC4 can be different.

Issue 8-1: TC list for inter-band CA requirement for FR2 UE measurement capability of independent Rx beam

* + Option 1 (Ericsson, Apple, MTK): The test case list for interband FR2+FR2 CA is

|  |  |
| --- | --- |
| Test 1 | SCell Activation and deactivation for FR2+FR2 inter-band |
| Test 2 | NR FR2- NR FR2 DL active BWP switch of PCell with non-DRX in SA |

* + Option 2 (Huawei, Apple, Qualcomm, MTK, Intel): For SCell activation and deactivation delay requirements, it is suggested to introduce new test cases for FR2 inter-band CA scenario in Rel-16.

Discussion:

Apple: Ok with Option 2.

E///: we are ok.

Agreement: TC list for inter-band CA requirement for FR2 UE measurement capability of independent Rx beam

|  |  |
| --- | --- |
| Test 1 | SCell Activation and deactivation for FR2+FR2 inter-band |

Issue 8-2: TC configurations for inter-band CA requirement for FR2 UE measurement capability of independent Rx beam

* Proposal 2(QC): RAN4 to introduce RRM test case(s) for IBM UEs supporting inter-band FR2 CA to verify if the UE meets RRM performance requirement(s) on both inter-bands when 2 AoAs are concurrently active from different angles, provided that
  + 2 AoAs are (pseudo) randomly selected and/or at least [X] degrees apart within a spherical coverage
    - If any restriction is identified by RF session, it should be respected and possible test directions will be updated accordingly
  + Both inter-band CCs transmit and configure reference signal(s) for independent beam management
  + SSB on one band and CSI-RS and/or PDCCH/PDSCH on the other band can have different numerologies
  + At least one RRM accuracy performance requirement should be met on both bands, and FFS on which RRM requirement.

**Decision:** The document was **noted**.

**R4-2017174 WF on R16 RRM enhancement part 1**

*Type: other For: discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017362**.

**R4-2017362 WF on R16 RRM enhancement part 1**

*Type: other For: discussion  
 Source: Intel Corporation*

(Replaces R4-2017174)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **approved**.

**R4-2017180 WF on R16 RRM enhancement part 2**

*Type: other For: discussion  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017363**.

**R4-2017363 WF on R16 RRM enhancement part 2**

*Type: other For: discussion  
 Source: ZTE Corporation*

(Replaces R4-2017180)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **approved**.

**R4-2017201 WF on R16 RRM enhancement part 3 - FR2 inter-band CA RRM**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **approved**.

**R4-2017202 WF on R16 RRM enhancement part 3**

*Type: other For: discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **approved**.

**R4-2017203 WF on R16 RRM enhancement part 3 - Inter-frequency measurement without MG**

*Type: other For: discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **approved**.

#### 7.13.1 RRM core requirements maintenance (38.133) [NR\_RRM\_Enh-Core]

##### 7.13.1.1 SRS carrier switching requirements [NR\_RRM\_Enh\_Core]

**R4-2014646 38.133 CR on conditions for NR SRS carrier switching**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1192 Cat: F (Rel-16)  
  
 Source: Qualcomm, Inc.*

**Abstract:**

When UL BWP switching is performed, RF retuning is required, therefore SRS carrier switching can not be performed simultaneously. A sentence is added to SRS carrier switching condition, to avoid collision between UL BWP switching on either carrier and SRS carrier switching.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **postponed**.

**R4-2017181 38.133 CR on conditions for NR SRS carrier switching**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1192 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **withdrawn**.

**R4-2015577 CR to 38.133: Correction to SRS carrier based switching requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1307 Cat: F (Rel-16)  
  
 Source: ZTE*

**Abstract:**

There are redundant sentences in the requirements that should be removed.

Wording should be improved to make the requirements clearer.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017182**.

**R4-2017182 CR to 38.133: Correction to SRS carrier based switching requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1307 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE*

(Replaces R4-2015577)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **agreed**.

**R4-2016421 Missing requirements for LTE SRS carrier-based switching**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-7000 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

LTE SRS carrier-based switching requirements impacting LTE cells in EN-DC and NE-DC are missing in TS 36.133. Ambiguous terminology.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **agreed**.

**R4-2016422 Correction in NR SRS carrier-based switching requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1391 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Incorrect requirement

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **agreed**.

##### 7.13.1.2 CGI reading requirements with autonomous gap [NR\_RRM\_Enh\_Core]

**R4-2015575 CR to 38.133: Correction to relaxed measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1306 Cat: F (Rel-16)  
  
 Source: ZTE*

**Abstract:**

For change #1

Reference clause is incorrect.

The applicable scenario for inter-RAT E-UTRA cell CGI reading is NR SA and NE-DC rather than EN-DC as in the requirement.

For change #2

Remove brackets

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017189**.

**R4-2017189 CR to 38.133: Correction to relaxed measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1306 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE*

(Replaces R4-2015575)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **agreed**.

**R4-2015576 CR to 36.133: Correction to NR CGI reading interruption requirements**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6972 Cat: F (Rel-16)  
  
 Source: ZTE*

**Abstract:**

Reference clause number is incorrect.

TMIB\_NR should be 25\* TSMTC for NR cells on FR2 by considering agreement that 1 additional SMTC is needed for AGC.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017190**.

**R4-2017190 CR to 36.133: Correction to NR CGI reading interruption requirements**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6972 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE*

(Replaces R4-2015576)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **agreed**.

**R4-2015774 CR on CGI reading requirements 38.133**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1328 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

SIB1 transmission is dynamically scheduled by PDCCH, so the actualy SIB1 transmission periodicty could be different from the default periodicity or SMTC periodicty.

There is no requirement applicable for NR CGI reading configured by NR PSCell when UE is in EN-DC.

The references to LTE serving cells interruption requirements for EN-DC and NE-DC are wrong.

The last sentence in 9.11.1 states that overall CGI delay includes the RRC procedure delay and the reporting delay in 9.11.3, while the reporting delay in 9.11.3 already includes RRC procedure delay, so the RRC procedure delay is counted twice.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017191**.

**R4-2017191 CR on CGI reading requirements 38.133**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1328 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015774)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **agreed**.

**R4-2015775 CR on CGI reading requirements 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6978 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

SIB1 transmission is dynamically scheduled by PDCCH, so the actualy SIB1 transmission periodicty could be different from the default periodicity or SMTC periodicty.

The last sentence in 8.1.2.4.27.1 states that overall CGI delay includes the RRC procedure delay and the reporting delay in 8.1.2.4.27.3, while the reporting delay in 8.1.2.4.27.1 already includes RRC procedure delay, so the RRC procedure delay is counted twice.

The requirements in 8.1.2.4 are only applicable for UE in LTE SA but not EN-DC or NE-DC.

MIB decoding delay for FR2 should be 25 SMTC periods (24 plus 1 for AGC).

The side condition of -3dB for MIB and SIB1 decoding is not captured.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017192**.

**R4-2017192 CR on CGI reading requirements 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6978 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015775)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **agreed**.

**R4-2016379 Maintenance CR on NR CGI reading in 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6996 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Update on the requirements for NR CGI reading in 36.133

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017193**.

**R4-2017193 Maintenance CR on NR CGI reading in 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6996 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016379)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **agreed**.

##### 7.13.1.3 BWP switching on multiple CCs [NR\_RRM\_Enh\_Core]

**R4-2014570 Discussion of RRC based BWP switching on multiple CCs**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2014773 Remaining issues on multiple BWP switch**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2014774 CR on multiple BWP switch in R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1203 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

RRC-based BWP switch cannot apply for SCell.

Thus, there is no the scenario for multiple RRC-based simultaneous BWP switch. For RRC-based partially overlapped multiple BWP switch, the application scenario will only be PCell plus PSCell in NR-DC.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **postponed**.

**R4-2014837 CR for simultaneous DCI based BWP switch delay on multiple CCs**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1206 Cat: F (Rel-16)  
  
 Source: vivo*

**Abstract:**

Current specification provides inconsistent ways on how to determine the SCS where BWP switch is based on.

Clear ambiguity of “all involved CCs”

Add value of D into specs.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **postponed**.

**R4-2015304 Discussion on cross carrier BWP switch delay requirements for single and multiple CC**

*Type: discussion For: Approval  
 Source: NEC*

**Abstract:**

We provide our views on delay requirements for DCI based BWP switching when the DCI indication is through cross carrier scheduling.

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **noted**.

**R4-2015305 CR to TS 38.133 on DCI based BWP switch requirements for cross carrier scheduling**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1252 Cat: F (Rel-16)  
  
 Source: NEC*

**Abstract:**

Existing DCI based BWP switch requirements are not applicable for DCI receved through cross-carrier schedling.

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **revised to R4-2017323**.

**R4-2017323 CR to TS 38.133 on DCI based BWP switch requirements for cross carrier scheduling**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1252 rev 1 Cat: F (Rel-16)  
  
 Source: NEC*

(Replaces R4-2015305)

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **agreed**.

**R4-2015505 CR on interruption due to active BWP switching on mulitple CCs**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1284 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The requirements of interruptions due to active BWP switch on multiple CCs resue the same requirements of BWP switch on single CC. However, the starting point of each BWP swich on multiple CCs is different from that of BWP switch on single CC.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **revised to R4-2017175**.

**R4-2017175 CR on interruption due to active BWP switching on mulitple CCs**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1284 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015505)

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **agreed**.

**R4-2015506 Discussion on requirements maintenance for BWP switch on multiple CCs**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2016165 Analysis of RRC based non-simultaneous multiple CC BWP**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The number of CCs in diferent CG can be different in RRC based non-simultaneous multiple CC BWP. This is clarified in the core requirements.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2016166 Correction to RRC based non-simultaneous multiple CC BWP**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1367 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

To correct requirements on RRC based non-simultaneous BWP on multiple CCs

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **revised to R4-2017176**.

**R4-2017176 Correction to RRC based non-simultaneous multiple CC BWP**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1367 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016166)

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **agreed**.

**R4-2016427 On Active BWP switching under cross-carrier scheduling**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on core requirements for active BWP switching with cross carrier scheduling.

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **noted**.

**R4-2016428 CR 38.133 Active BWP switching with cross-carrier scheduling**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1392 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Requirements for active BWP switching when cross carrier scheduling (Rel-16 feature) is used are missing.

**Discussion:**

See email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 in R4-2017010.

**Decision:** The document was **not pursued**.

##### 7.13.1.4 Spatial relation switch for uplink [NR\_RRM\_Enh\_Core]

**R4-2014250 Requirements for UL spatial relation info switch**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2014771 Remaining issues on active spatial relation switch**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2015308 Discussion on spatial relation switch for uplink**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2015498 Discussion on the remaining issues on spatial relation switch**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2015499 Correction on RRC based spatial relation switch delay**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1281 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For RRC based spatial relation delay, the unit is not correct.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **agreed**.

**R4-2016026 CR 38.133 Corrections to MAC-CE and RRC-based spatial relation switching requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1351 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The current specification text refers to a condition for the requirement to apply in the following way: “ […] when beamCorrespondenceWithoutUL-BeamSweeping sets to 1 […]”. What this means may not be immediately clear to the reader. Moreover, the condition is mentioned at the end of a paragraph, which means that the reader has to parse the whole paragraph before potentially finding that the requirement as such does not apply.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **postponed**.

##### 7.13.1.5 Inter-band CA requirement for FR2 UE measurement capability of independent Rx beam and/or common beam [NR\_RRM\_Enh\_Core]

**R4-2014275 Draft CR on maintenance for inter-band FR2 CA RRM**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

**Abstract:**

CBM specific RRM requirement is downscoped from R16 and the corresponding requirement shall be cleaned up in TS38.133.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017204**.

**R4-2017204 Draft CR on maintenance for inter-band FR2 CA RRM**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

(Replaces R4-2014275)

**Discussion:**

Chair: Endorsed. Official CR can be submitted in the next meeting.

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

**R4-2014873 Discussion on Inter-band CA requirement for FR2**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **noted**.

**R4-2014874 Correction on unknown SCell activation in FR2.**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1212 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

Requirement is missing for unknown SCell activation in FR2 with FR1-FR2 CA (e.g NR SA, PCell in FR1 and SCell in FR2), because the applicability of requiremrent was changed to cover the case with FR2 inter-band CA. However, the requirement is still needed for FR1-FR2 CA.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017205**.

**R4-2017205 Correction on unknown SCell activation in FR2.**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1212 rev 1 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

(Replaces R4-2014874)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **agreed**.

**R4-2015309 Discussion on inter-band CA requirement for FR2**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **noted**.

**R4-2015985 CR on measurement restrictions for FR2 inter-band CA**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1340 Cat: F (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

To align with the solution of the same issue for scheduling availability

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **agreed**.

**R4-2016576 BM resources for FR2 Inter-band IBM UEs**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **noted**.

##### 7.13.1.6 Other requirements maintenance [NR\_RRM\_Enh\_Core]

**R4-2014277 Draft CR on UE behavior for UE specific CBW change**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

**Abstract:**

The UE behavior for Tx/Rx during CBW change delay is missing.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **revised to R4-2017209**.

**R4-2017209 Draft CR on UE behavior for UE specific CBW change**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

(Replaces R4-2014277)

**Discussion:**

Chair: Endorsed. Official CR can be submitted in the next meeting.

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **endorsed**.

**R4-2014364 CR on TS38.133 for inter-frequency measurement requirement without gap**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1158 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

When all of the SMTC occasions of this inter-frequency measurement object are overlapped by the measurement gap, UE can only conduct the measurement within gap and follow the requirement in clause 9.3.4.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **agreed**.

**R4-2014772 Remaining Issues on multiple SCell Activation**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2014861 Editorial CR for inter frequency measurements without measurement gaps (9.3.9)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

**Abstract:**

Several tables in clause 9.3.9 have the incorrect table index: 9.3.4.x, which are already used in clause 9.3.4 with different content.

Some title above table is also incorrect.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **endorsed**.

**R4-2015496 CR on inter-frequency measurement without gap**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1280 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

From AGC adjustment point of view, the power imbalance between intra-frequency layer and inter-frequency layer on which UE performs inter-frequency measurement without gap shall be limited, otherwise the measurement performance will be degraded.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **postponed**.

**R4-2017208 CR on inter-frequency measurement without gap**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1280 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **withdrawn**.

**R4-2015578 CR to 38.133: Correction to mandatory gap pattern**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1308 Cat: F (Rel-16)  
  
 Source: ZTE*

**Abstract:**

The UE capability for NR only measurement are introduced as follows.

supportedGapPattern-NRonly

Indicates measurement gap pattern(s) optionally supported by the UE for NR SA and NR-DC when the frequencies to be measured within this measurement gap are all NR frequencies. The leading / leftmost bit (bit 0) corresponds to the gap pattern 2, the next bit corresponds to the gap pattern 3 and so on. The UE shall set the bits corresponding to the measurement gap pattern 2, 3 and 11 to 1.

supportedGapPattern-NRonly-NEDC

Indicates whether the UE supports gap patterns 2, 3 and 11 in NE-DC when the frequencies to be measured within this measurement gap are all NR frequencies.

measGapPatterns-NRonly-ENDC-r16

This field indicates whether the UE supports gap patterns 2, 3 and 11 in (NG)EN-DC when the frequencies to be measured within this measurement gap are all NR frequencies.

The requirements need to be consistent with the UE capability.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **revised to R4-2017199**.

**R4-2017199 CR to 38.133: Correction to mandatory gap pattern**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1308 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE*

(Replaces R4-2015578)

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **agreed**.

**R4-2015579 CR to 36.133: Introduce requirements for mandatory gap pattern**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6973 Cat: B (Rel-16)  
  
 Source: ZTE*

**Abstract:**

The UE capability for NR only measurement under LTE SA are introduced as follows.

measGapPatterns-NRonly-r16

This field indicates whether the UE supports gap patterns 2, 3 and 11 in LTE standalone when the frequencies to be measured within this measurement gap are all NR frequencies.

The requirements need to be introduced to ensure correct configuration of corresponding gap patterns.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **revised to R4-2017200**.

**R4-2017200 CR to 36.133: Introduce requirements for mandatory gap pattern**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6973 rev 1 Cat: B (Rel-16)  
  
 Source: ZTE*

(Replaces R4-2015579)

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **agreed**.

**R4-2015771 Discussion on remaining issues in multiple SCell activation**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2015772 CR on SCell activation requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1327 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In multiple SCell activation, UE is assumed to skip cell detection for unknown FR1 SCell that is intra-band contiguous to active serving cell. The same can be extended to single SCell activation to speed up the activation process.

In multiple SCell activation, there is a case where no requriement applies for an FR1 unknown SCell that is intra-band contiguous to active or known SCell. However, the requirements for other SCells being activated with same MAC CE are not defined

UE cannot meet the current interuption requirements for multiple SCell activation if SMTC offsets for the SCells are misaligned.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **postponed**.

**R4-2017206 CR on SCell activation requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1327 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **withdrawn**.

**R4-2016019 CR 38.133 Removal of brackets for Multiple SCell activation**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1347 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The specification text contains side condition on Ês/Iot with value within brackets, Ês/Iot ≥ [-2]dB. The side condition is however aligned with corresponding conditions for requirements on SCell activation of single SCell, and hence can be removed.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **agreed**.

**R4-2016574 Multi-SCell activation for FR1 intra-band contiguous CA**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2016583 CR to Multi-SCell activation for FR1 intra-band contiguous CA**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1400 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

One of conditions for FR1 contiguous multi-SCell activation may conflict with RAN1 spec and potentially cause unexpected issues depending on how the assumption can be further exploited by the UE.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017207**.

**R4-2017207 CR to Multi-SCell activation for FR1 intra-band contiguous CA**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1400 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2016583)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **agreed**.

#### 7.13.2 RRM perf. requirements (38.133) [NR\_RRM\_Enh-Perf]

##### 7.13.2.1 General [NR\_RRM\_Enh-Perf]

**R4-2014566 Work plan of Rel-16 NR RRM enhancements WI performance part**

*Type: discussion For: Approval  
 Source: Intel Corporation, ZTE Corporation, Apple*

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017222**.

**R4-2017222 Work plan of Rel-16 NR RRM enhancements WI performance part**

*Type: discussion For: Approval  
 Source: Intel Corporation, ZTE Corporation, Apple*

(Replaces R4-2014566)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **approved**.

**R4-2017386 Draft Big CR: Introduction of Rel-16 NR RRM enhancements WI performance requirements and test cases**

*Type: draftCR For: Endorsement  
 38.133 v..  
 Source: Intel Corporation, ZTE Corporation, Apple*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2016420 On test cases for SRS carrier-based switching in NR**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On test cases for SRS carrier-based switching in NR

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **noted**.

##### 7.13.2.2 Test cases [NR\_RRM\_Enh-Perf]

###### 7.13.2.2.1 SRS carrier switching requirements [NR\_RRM\_Enh-Perf]

**R4-2014227 E-UTRAN – NR FR2 interruptions at NR SRS carrier based switching (A.5.5.2.X)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

**Abstract:**

RRM requirements for SRS carrier based switching have been introduced. However, corresponding test cases have not yet been specified.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017183**.

**R4-2017183 E-UTRAN – NR FR2 interruptions at NR SRS carrier based switching (A.5.5.2.X)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

(Replaces R4-2014227)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017364**.

**R4-2017364 E-UTRAN – NR FR2 interruptions at NR SRS carrier based switching (A.5.5.2.X)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

(Replaces R4-2017183)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **endorsed**.

**R4-2014789 CR to TS 38.133 TC for E-UTRAN**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

**Abstract:**

The test case for E-UTRAN – NR interruptions at E-UTRA SRS carrier based switching is specified.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017184**.

**R4-2017184 CR to TS 38.133 TC for E-UTRAN**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

(Replaces R4-2014789)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **endorsed**.

**R4-2015495 TC for E-UTRAN**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

The test case for E-UTRAN – NR interruptions at E-UTRA SRS carrier based switching is specified.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017185**.

**R4-2017185 TC for E-UTRAN**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015495)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **endorsed**.

**R4-2015581 Test case list for SRS carrier based switching**

*Type: discussion For: Approval  
 Source: ZTE*

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **noted**.

**R4-2015584 Draft CR on test case for SA interruptions at NR SRS carrier based switching**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: ZTE*

**Abstract:**

Test case for NR SRS carrier based switching need to be introduced to verify corresponding core requirements.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017186**.

**R4-2017186 Draft CR on test case for SA interruptions at NR SRS carrier based switching**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: ZTE*

(Replaces R4-2015584)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017365**.

**R4-2017365 Draft CR on test case for SA interruptions at NR SRS carrier based switching**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: ZTE*

(Replaces R4-2017186)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **endorsed**.

**R4-2016052 38133 CR for Test case of E-UTRAN NR FR1 interruptions at NR SRS carrier switching**

*Type: discussion For: Endorsement  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017187**.

**R4-2017187 38133 CR for Test case of E-UTRAN NR FR1 interruptions at NR SRS carrier switching**

*Type: draftCR For: Endorsement  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016052)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017366**.

**R4-2017366 38133 CR for Test case of E-UTRAN NR FR1 interruptions at NR SRS carrier switching**

*Type: draftCR For: Endorsement  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2017187)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **endorsed**.

**R4-2016423 On TC2 configuration (SA interruptions at NR SRS carrier-based switching)**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On TC2 configuration (SA interruptions at NR SRS carrier-based switching)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **noted**.

**R4-2017188 On TC2 configuration (SA interruptions at NR SRS carrier-based switching)**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **withdrawn**.

###### 7.13.2.2.2 Multiple Scell activation/deactivation [NR\_RRM\_Enh-Perf]

**R4-2014276 Test case of SCell activation and deactivation of multiple unknown SCells in FR1 with single activation/deactivation command**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

**Abstract:**

Test case of SCell activation and deactivation of multiple unknown SCells in FR1 with single activation/deactivation command is missing.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017210**.

**R4-2017210 Test case of SCell activation and deactivation of multiple unknown SCells in FR1 with single activation/deactivation command**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

(Replaces R4-2014276)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

**R4-2014777 DraftCR on multiple SCell activation with FR1+FR2 unknown cells in NR-DC Test Case**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

**Abstract:**

The multiple SCell activation with FR1+FR2 unknown cells test case is missing.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017211**.

**R4-2017211 DraftCR on multiple SCell activation with FR1+FR2 unknown cells in NR-DC Test Case**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

(Replaces R4-2014777)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

**R4-2015580 Test case list for NR CGI reading with autonomous gaps**

*Type: discussion For: Approval  
 Source: ZTE*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **noted**.

**R4-2015583 Draft CR on test case for SA intra-frequency CGI identification of NR neighbor cell in FR1**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: ZTE*

**Abstract:**

Test cases for NR CGI reading need to be introduced to verify corresponding core requirements.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017196**.

**R4-2017196 Draft CR on test case for SA intra-frequency CGI identification of NR neighbor cell in FR1**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: ZTE*

(Replaces R4-2015583)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

**R4-2015773 draftCR to introduce multiple SCell activation TC2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Based on R4-2012164, RRM test cases are to be introduced for multiple SCell activation.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017212**.

**R4-2017212 draftCR to introduce multiple SCell activation TC2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015773)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

###### 7.13.2.2.3 CGI reading requirements with autonomous gap [NR\_RRM\_Enh-Perf]

**R4-2014642 CGI reading test scope and requirement discussion**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **noted**.

**R4-2014776 DraftCR on SA CGI identification of E-UTRA neighbor cell Test Case**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

**Abstract:**

The SA CGI identification of E-UTRA neighbor cell test case is missing.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017194**.

**R4-2017194 DraftCR on SA CGI identification of E-UTRA neighbor cell Test Case**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

(Replaces R4-2014776)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **endorsed**.

**R4-2015171 Test case list and configurations for CGI reading**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Proposed test case list for CGI reading

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **noted**.

**R4-2015172 CR to introduce interfrequency FR2 CGI reading test for SA NR (TC2)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1242 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Introduction of TC2 as discussed on RAN4 reflector for CGI reading with autonomous gaps

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017195**.

**R4-2017195 CR to introduce interfrequency FR2 CGI reading test for SA NR (TC2)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1242 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015172)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **endorsed**.

**R4-2015776 draftCR on TC for EN-DC inter-frequency CGI identification of NR neighbor cell in FR2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

RRM core requirements for CGI reading are defined, but there is no RRM test case for CGI reading.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017197**.

**R4-2017197 draftCR on TC for EN-DC inter-frequency CGI identification of NR neighbor cell in FR2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015776)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **endorsed**.

**R4-2016380 Test cases for EN-DC intra-frequency CGI identification of NR neighbour cell in FR1**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Test cases for EN-DC intra-frequency CGI identification of NR cell with autonomous gaps in FR1

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017198**.

**R4-2017198 Test cases for EN-DC intra-frequency CGI identification of NR neighbour cell in FR1**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016380)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **endorsed**.

###### 7.13.2.2.4 BWP switching on multiple CCs [NR\_RRM\_Enh-Perf]

**R4-2014251 Discussion on testcases for BWP switching on multiple CCs**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2014567 Discussion on test cases for BWP switching on multiple CCs**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2014568 CR on simultaneous DCI-based and Timer-based Active BWP Switch on multiple CCs on FR1 in EN-DC (section 4.5.6.3)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Intel Corporation*

**Abstract:**

test case for simultaneous DCI-based and Timer-based Active BWP Switch on multiple CCs on FR1 in EN-DC is missing.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **postponed**.

**R4-2014778 Discussion on multiple BWP switch test case**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2014838 CR for test cases for simultaneously DCI/timer based bwp switch over mulitple CCs**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1207 Cat: B (Rel-16)  
  
 Source: vivo*

**Abstract:**

Add test cases for simultaneously DCI/timer based bwp switch over mulitple cc

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **postponed**.

**R4-2014839 Discussion on test cases for BWP switch on multiple CCs**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2015507 Discussion on performance requirements for BWP switch on multiple CCs**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2016167 Test cases for BWP switching on multiple CCs**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper discusses scenarios for RRM tests for multiple BWP switching and corresponding list of test

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2016381 discussion on the test cases for BWP switch on multiple CCs**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on test cases for BWP switch considering multiple CCs.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2016572 Performance requirements for BWP switching on multiple CCs**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

###### 7.13.2.2.5 Inter-frequency measurement requirement without MG [NR\_RRM\_Enh-Perf]

**R4-2014226 Test case for inter-frequency measurement without gap: SA event triggered reporting tests for FR1 when DRX is used (A.6.6.2.X)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

**Abstract:**

RRM requirements for inter-frequency measurement without gap have been introduced. However, corresponding test cases have not yet been specified.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017213**.

**R4-2017213 Test case for inter-frequency measurement without gap: SA event triggered reporting tests for FR1 when DRX is used (A.6.6.2.X)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

(Replaces R4-2014226)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

**R4-2014365 CR on TS38.133 SA event triggered reporting tests for FR2 without gap when DRX is used (A.7.6.2.X)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

**Abstract:**

Test case for inter-frequency measurement without MG for FR2 when DRX is used shall be specified.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017214**.

**R4-2017214 CR on TS38.133 SA event triggered reporting tests for FR2 without gap when DRX is used (A.7.6.2.X)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

(Replaces R4-2014365)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017369**.

**R4-2017369 CR on TS38.133 SA event triggered reporting tests for FR2 without gap when DRX is used (A.7.6.2.X)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

(Replaces R4-2017214)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017387**.

**R4-2017387 CR on TS38.133 SA event triggered reporting tests for FR2 without gap when DRX is used (A.7.6.2.X)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

(Replaces R4-2017369)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

**R4-2014645 Inter-f without MG test scope and configuration discussion**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **noted**.

**R4-2014731 Discussion on test case on inter-frequency measurement without MG**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **noted**.

**R4-2014732 Draft CR to TS 38.133: SA event triggered reporting tests for FR1 without gap when DRX is not used (A.6.6.2.X)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: CMCC*

**Abstract:**

Test case for inter-frequency measurement without MG shall be specified.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017215**.

**R4-2017215 Draft CR to TS 38.133: SA event triggered reporting tests for FR1 without gap when DRX is not used (A.6.6.2.X)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: CMCC*

(Replaces R4-2014732)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

**R4-2015497 Test case for Inter-frequency measurements: SA event triggered reporting tests for FR2 without gap when DRX is not used**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

If UE supports interFrequencyMeas-NoGap-r16 and the flag interFrequencyConfig-NoGap-r16 is configured by the network, UE shall be able to perform inter-frequency measurement without gap. The test case for SA event triggered reporting tests for FR2 without gap when DRX is not used is specified.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017216**.

**R4-2017216 Test case for Inter-frequency measurements: SA event triggered reporting tests for FR2 without gap when DRX is not used**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015497)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

###### 7.13.2.2.6 Mandatory MG patterns [NR\_RRM\_Enh-Perf]

**R4-2014228 Testing applicability for new mandatory gap patterns**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **noted**.

**R4-2014643 Mandatory gap pattern test scope and applicability rule discussion**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **noted**.

**R4-2014644 Mandatory gap pattern test**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm, Inc.*

**Abstract:**

The additional RRM tests for new mandatory gap pattern are not specified.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **merged**.

**R4-2015174 Test case list for mandatory measurement gap**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

CR to introduce TC2 for CGI reading as discussed on the RAN4 reflector

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **noted**.

**R4-2015175 Test cases for mandatory measurement gap**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1243 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Addition of extra tests using GP 2,3,11, 17, 18 and 19

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017339**.

**R4-2017339 Test cases for mandatory measurement gap**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1243 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015175)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **endorsed**.

**R4-2015582 Test case list for mandatory gap pattern**

*Type: discussion For: Approval  
 Source: ZTE*

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **noted**.

**R4-2015585 Draft CR on test case for SA event triggered reporting tests with additional mandatory gap pattern**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: ZTE*

**Abstract:**

Test case for mandatory gap pattern need to be introduced to verify corresponding core requirements.

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **revised to R4-2017340**.

**R4-2017340 Draft CR on test case for SA event triggered reporting tests with additional mandatory gap pattern**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: ZTE*

(Replaces R4-2015585)

**Discussion:**

See email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 in R4-2017018.

**Decision:** The document was **endorsed**.

###### 7.13.2.2.7 UE-specific CBW change [NR\_RRM\_Enh-Perf]

**R4-2014278 Test case list for UE specific CBW change**

*Type: discussion For: Agreement  
 38.133 v..  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **noted**.

**R4-2014279 Test case of UE specific CBW change on FR1 NR PSCell with non-DRX in synchronous EN-DC**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

**Abstract:**

The test case of UE specific CBW change on FR1 NR PSCell with non-DRX in synchronous EN-DC is missing.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017217**.

**R4-2017217 Test case of UE specific CBW change on FR1 NR PSCell with non-DRX in synchronous EN-DC**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Apple*

(Replaces R4-2014279)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

**R4-2015302 Draft CR on TC for UE specific CBW change on FR2 NR PCell in NR SA**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: NEC*

**Abstract:**

TC for UE specific CBW change on FR2 NR PCell in NR SA are not available in specification

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017218**.

**R4-2017218 Draft CR on TC for UE specific CBW change on FR2 NR PCell in NR SA**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: NEC*

(Replaces R4-2015302)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

**R4-2015777 draftCR on TC for UE specific CBW change on FR2 NR PSCell in EN-DC**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

RRM core requirements for U-CBW change are defined, but there is no RRM test case for U-CBW change.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017219**.

**R4-2017219 draftCR on TC for UE specific CBW change on FR2 NR PSCell in EN-DC**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015777)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

**R4-2016168 Analysis of TC3: UE specific CBW change on FR1 NR PCell in NR SA**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper describes test case setup for UE specific CBW change in SA NR scenario

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **noted**.

**R4-2016169 TC3: UE specific CBW change on FR1 NR PCell in NR SA (A.6.5.7)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1368 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

To define new test on UE specific CBW change on FR1 NR PCell in NR SA

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017220**.

**R4-2017220 TC3: UE specific CBW change on FR1 NR PCell in NR SA (A.6.5.7)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1368 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016169)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

###### 7.13.2.2.8 Spatial relation switch for uplink [NR\_RRM\_Enh-Perf]

**R4-2014569 Discussion on test cases for UL spatial relation switch**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2014775 DraftCR on spatial relation switch test case**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

**Abstract:**

The E-UTRAN – NR PSCell FR2 uplink spatial relation switch for a known spatial relation test case is missing.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **revised to R4-2017177**.

**R4-2017177 DraftCR on spatial relation switch test case**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

(Replaces R4-2014775)

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **endorsed**.

**R4-2015500 TC for RRC based spatial relation switch associated with a known DL-RS**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

The test case for RRC based spatial relation switch associated with a known DL-RS in EN-DC is specified.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **revised to R4-2017178**.

**R4-2017178 TC for RRC based spatial relation switch associated with a known DL-RS**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015500)

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **endorsed**.

**R4-2015885 RRC based spatial relation switch associated with a known DL-RS in SA**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1339 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **withdrawn**.

**R4-2016014 On TC3 MAC-CE based spatial relation info switching**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Background information on Test case 3: MAC-CE based spatial relation switch associated with a known DL-RS in SA.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **noted**.

**R4-2016015 CR 38.133 TC3 MAC-CE based spatial relation info switching**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1345 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

During email discussions following the RAN4#96e meeting it was proposed that four test cases are to be introduced for verifying the spatial relation switching functionality. This CR covers TC 3: MAC-CE based spatial relation switch associated with a known  DL-RS in SA.

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **revised to R4-2017179**.

**R4-2017179 CR 38.133 TC3 MAC-CE based spatial relation info switching**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1345 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016015)

**Discussion:**

See email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 in R4-2017017.

**Decision:** The document was **endorsed**.

###### 7.13.2.2.9 Inter-band CA requirement for FR2 UE measurement capability of independent Rx beam [NR\_RRM\_Enh-Perf]

**R4-2015173 Test case list for FR2 inter-band carrier aggregation**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

ProposedRRM test case list for FR2 +FR2 interband CA

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **noted**.

**R4-2015475 Discussion on RRM test cases for FR2 inter-band CA**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **noted**.

**R4-2015476 DraftCR on SCell activation and deactication delay test for FR2 inter-band CA**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

In Rel-16, FR2 inter-band CA band combinations are introduced, and the SCell activation and deactication delay test need to be verified in FR2 inter-band CA scenario.

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **revised to R4-2017221**.

**R4-2017221 DraftCR on SCell activation and deactication delay test for FR2 inter-band CA**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015476)

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **endorsed**.

**R4-2016577 Performance requirements for FR2 Inter-band IBM UEs**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 in R4-2017019.

**Decision:** The document was **noted**.

### 7.14 NR RRM requirements for CSI-RS based L3 measurement [NR\_CSIRS\_L3meas]

**R4-2017020 Email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (CATT)*

**Discussion:**

The contribution summarized email discussion thread [97e][221] NR\_CSIRS\_L3meas\_RRM\_1. The email thread was moderated by Qiuge Guo (CATT) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017291**.

**R4-2017291 Email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (CATT)*

(Replaces R4-2017020)

**Discussion:**

The contribution summarized email discussion thread [97e][221] NR\_CSIRS\_L3meas\_RRM\_1. The email thread was moderated by Qiuge Guo (CATT) and treated during RRM session chaired by Andrey Chervyakov (Intel).

GTW session (November 06, 2020)

Sub-topic 2-2 CSI-RSRP requirements (issue 2-2-1)

* Issue 2-2-1: How to handle the potential performance degradation of CSI-RSRP measurement due to single FFT?
  + Option 1: Possibly specify 2 sets of requirements. (MTK, CATT, Intel, DCM, CMCC, ZTE)
    - Specify CSI-RSRP accuracy requirement with the timing offset between UE’s FFT window and the target CSI-RS shorter than CP. FFS whether and how to specify requirements with timing offset larger than CP.
    - Reuse the accuracy requirements of SS-RSRP for CSI-RS based L3 measurement with the timing offset between UE’s FFT window and the target CSI-RS shorter than CP.
  + Option 2: 1 set of requirements with a margin on existing requirements (Xiaomi, OPPO)
    - The accuracy requirement of CSI-RS L3 measurement can be defined as adding [1] dB margin on the basis of SSB based accuracy requirement.
  + Option 3: 1 set of requirements based on [3]us timing error (Huawei)
    - CSI-RSRP accuracy requirements are defined to be SCS specific.
    - CSI-RSRP accuracy requirements are derived from the simulation results.
  + Option 4: 1 set of requirements with applicability (Nokia, Apple)
    - In Rel16, the UE is not required to measure the CSI-RS resource if the timing difference exceeds a threshold. Typically, the threshold could be set to one or twice of the CP lengths.

Discussion:

Apple: commonality is that we can specify the requirements for timing offset within the CP. One CP is quite restrictive in case of multi-TRP scenarios but we are ok if this is the majority view.

CMCC: Prefer Option 1. We can specify two sets of requirements.

Nokia: Performance will be degraded in case the timing offset is larger than CP. The question is how to take into account the actual timing offset since the performance is very sensitive (e.g. > 4dB). The NW does not know the timing offset and we prefer UE not to report the RSRP in case the offset is very big.

Xiaomi: for Option 1 how can we can guarantee that timing offset is within the CP? We are open to discuss the exact threshold

Huawei: Option 3. Can compromise to Option 1. We see the need for the 2nd set of requirements. For Nokia comments – we agree that NW does not know the offset but we are not clear how the feature will work for Option 4?

QC: we analyzed 3us offset and observed 1dB degradation. We can support Option 1 with 2 sets of requirements: within CP and within 3us.

ZTE: Support of QC proposal

Agreement:

Specify the following L3 CSI-RSRP measurement accuracy requirements

* + - Case 1: the timing offset between UE’s FFT window and the target CSI-RS is smaller or equal to [CP]
      * FFS: Reuse the accuracy requirements of SS-RSRP
      * FFS on whether gNB needs to know that the timing offset is smaller or equal to CP and how to provide such information if needed
    - FFS: Case 2: the timing offset between UE’s FFT window and the target CSI-RS is larger than [CP]

Sub-topic 1-1 Measurement restriction (1-1-2)

* Issue 1-1-2: How to define requirements for scenario 1 and scenario 2?
  + Scenario 1: CSI-RS resources and SSB are fully or partially overlapped in time domain.
  + Scenario 2: CSI-RS resources and SSB are non-overlapped in time domain.
    - Option 1: (MTK, Huawei, Xiaomi, CATT, QC, OPPO, Intel, vivo, DCM, apple, ZTE)
      * CSSF frame work can generally apply to both scenarios (i.e. the CSSF shall be extended for both scenarios).
    - Option 2: (Nokia, CMCC)
      * The CSSF shall only be extended for Scenario 1 and remains unchanged for Scenario 2.

Discussion:

Nokia: In Scenario 2 there will be no interruption and the measurements can be done in parallel.

Huawei: this was discussed in Rel-15 and companies could not agree on the definition of overlapping/non-overlapping case ue to UE processing time arguments. So we decided to go with the worst case – i.e. apply CSSF all the time.

MTK: Agree with Huawei.

CMCC: we are ok to compromise to Option 1.

Apple: Agree with Option 1. UE needs to buffer data. Non-overlapping does not mean that UE can do measurements in parallel.

Apple: the agreed CR in the last meeting does not differentiate CSSF for Scenario 1 and 2 (R4-2012181)

Chair: continue discussion till the 2nd round

Tentative agreement:

* + CSSF framework applies to both Scenario 1 (CSI-RS resources and SSB are fully or partially overlapped in time domain) and Scenario 2 (CSI-RS resources and SSB are non-overlapped in time domain)

Sub-topic 1-3 Scheduling restriction (issue 1-3-1)

* Issue 1-3-1: Whether/How to define scheduling restriction when UE performs CSI-RS intra-frequency measurements in a TDD band?
  + Option 1: Introduce scheduling restriction for TDD band.
    - Option 1a: (Huawei, Xiaomi, CATT, OPPO, Intel, LGE, DCM, CMCC, Apple)
      * When UE performs CSI-RS intra-frequency measurements in a TDD band, UE is not expected to transmit on data OFDM symbols overlapped by CSI-RS resource symbols to be measured, and 1 OFDM symbols before and after each consecutive CSI-RS symbols.
    - Option 1b: (Huawei, CATT, QC, Intel, CMCC, ZTE, MTK)
      * When UE performs CSI-RS intra-frequency measurements in a TDD band, UE is not expected to transmit on data OFDM symbols fully or partially overlapped by CSI-RS resource symbols to be measured.
    - Option 1c: (Nokia)
      * When UE performs CSI-RS intra-frequency measurements in a TDD band, UE is not expected to transmit on data OFDM symbols overlapped by CSI-RS resource symbols to be measured, and 1 OFDM symbols before each consecutive CSI-RS symbols.
  + Option 2: (vivo)
    - Do not introduce scheduling restriction for TDD band.

Discussion

MTK: we prefer 1b

Nokia: not clear why there is some impact on the symbol after CSI-RS. Ok with Option 1a

Apple: 1a. NW does not know if there is overlap and 1a gives some margin.

vivo: why do we need scheduling restriction? RAN1 already resolved it

Huawei: based on RAN1 the data is prioritized but this conflict with RAN4 conclusions. So RAN1 added a clarification that prioritization applies when RAN4 shceduling restriction are not applicable.

Agreement

* + Introduce a scheduling restriction for TDD band when UE performs CSI-RS intra-frequency measurements in a TDD band
    - Option 1a: (Huawei, Xiaomi, CATT, OPPO, Intel, LGE, DCM, CMCC, Apple, Nokia)
      * When UE performs CSI-RS intra-frequency measurements in a TDD band, UE is not expected to transmit on data OFDM symbols overlapped by CSI-RS resource symbols to be measured, and 1 OFDM symbols before and after each consecutive CSI-RS symbols.
    - Option 1b: (Huawei, CATT, QC, Intel, CMCC, ZTE, MTK)
      * When UE performs CSI-RS intra-frequency measurements in a TDD band, UE is not expected to transmit on data OFDM symbols fully or partially overlapped by CSI-RS resource symbols to be measured.
    - FFS whether the scheduling restrictions apply for all scenarios when UE performs CSI-RS measurements

Sub-topic 1-4 Time domain restriction (issue 1-4-1)

* Issue 1-4-1: How to define the time domain restriction for CSI-RS resource configuration?
  + Option 1: (Huawei, Xiaomi, vivo, ZTE)
    - The CSI-RS measurement requirements apply provided that any two CSI-RS resource i and resource j of a frequency layer satisfy



* + - where Offi and Offj are time offsets (in millisecond) of CSI-RS resource i and j respectively with respect to the serving cell timing.)
  + Option 2: (existing requirement) (MTK, Xiaomi, CATT, OPPO, Nokia, Apple)
    - The CSI-RS measurement requirements apply provided that CSI-RS resources per frequency layers are configured within 5 ms window at any location

Sub-topic 1-5 Definition of CSSF

* Issue 1-5-1: Whether the additional changes can be acceptable?
  + (Based on CR R4-2014235, R4-2014623 and R4-2015491)

Sub-topic 2-2 Issue 2-2-5 (together with part 2)

* Issue 2-2-5: Whether to introduce test case for FDD duplex mode?
  + Option 1: No (MTK, Xiaomi, CATT, Qualcomm, OPPO, vivo)
  + Option 2: Yes (Huawei, Nokia, ZTE)

Sub-topic 2-3 CSI-RSRQ requirements (issue 2-3-2)

* Issue 2-3-2: Report mapping for CSI-RSRQ measurement?
  + Option 1: (Huawei, CATT, Xiaomi, OPPO, QC, Apple, ZTE)
    - Reuse the report mapping for L3 SS-RSRQ (i.e. from -43 dB to +20 dB with 0.5 dB resolution).
  + Option 2: (vivo)
    - The range of CSI-RSRQ report is from -43 dB to 0 dB with 0.5 dB resolution.

1st round email discussion conclusions

**Topic #1: CSI-RS RRM core requirements maintenance**

Issue 1-1-1: Whether to define requirements for scenario 1 and scenario 2 in R16?

Agreement: Specify requirements for both scenario 1 and 2:

* Scenario 1: CSI-RS resources and SSB are fully or partially overlapped in time domain.
* Scenario 2: CSI-RS resources and SSB are non-overlapped in time domain.

Issue 1-1-2: How to define requirements for scenario 1 and scenario 2?

Agreement: CSI-RS and SSB for L3 measurement, including gap based and non-gap based, equally share the measurement opportunities for both scenarios.

Issue 1-3-2: Whether/How to define scheduling restriction under the case of mixed numerology?

Agreement:

* + No scheduling restriction as same numerology is assumed for intra-frequency CSI-RS and data of serving cell.
  + Add the above assumption to the applicability section in intra-frequency CSI-RS based L3 measurement specification.

Issue 1-3-3: Whether/How to define scheduling restriction for FR1 FDD?

Agreement: No scheduling restriction for FR1 FDD.

Issue 1-6-1: Whether the agreement is applicable to SSB based L1 measurement?

Agreement:

* Do not define CSI-RS measurement requirements in Rel-16 for the collision case:
  + - * Collision between CSI-RS based L3 measurement of neighbor cell and serving cell measurement for SSB/CSI-RS based RLM/BFD or other SSB/CSI-RS based L1 measurements

**Topic #2: CSI-RS RRM performance requirements.**

Issue 2-2-2: Side condition for CSI-RSRP measurement?

Agreements:

Reuse the side condition of SS-RSRP, i.e.

FR1 intra-frequency: Es/Iot≥-6dB

FR2 intra-frequency: Es/Iot≥-6dB

FR1 inter-frequency: Es/Iot≥-6dB

FR2 inter-frequency: Es/Iot≥-4dB

Issue 2-2-3: Report mapping for CSI-RSRP measurement?

Agreements: Reuse the report mapping of SS-RSRP.

Issue 2-3-1: How to define accuracy requirements for CSI-RSRQ measurement?

Agreements: Follow the principle of CSI-RSRP measurement defined in issue 2-2-1.

Issue 2-3-3: Side condition for CSI-RSRQ measurement requirements?

Agreements: Reuse the side condition for L3 SS-RSRQ.

Issue 2-3-4: Number of samples to be used for defining CSI-RSRQ measurement accuracy requirements?

Agreements: Follow the conclusion of CSI-RSRP measurement in issues 2-2-4.

Issue 2-4-1: Accuracy requirements for CSI-SINR measurement?

Agreements: Follow the principle of CSI-RSRP measurement defined in issue 2-2-1.

Issue 2-4-2: Side condition of CSI-SINR measurement?

Agreements: RAN4 to discuss how to handle the upper limit of Ês/Iot in the CSI-SINR accuracy requirement together with the timing offset. The lower bound of side condition(Ês/Iot) for CSI-SINR accuracy requirements can be same as that of L3 SS-SINR measurement

Issue 2-4-4: Number of samples to be used for defining CSI-SINR measurement accuracy requirements?

Agreements: Follow the conclusion of CSI-RSRP measurement in issues 2-2-4.

GTW session (November 12, 2020)

Issue 2-2-1: How to handle the potential performance degradation of CSI-RSRP measurement due to single FFT?

Agreements in the 1st round GTW:

Specify the following L3 CSI-RSRP measurement accuracy requirements

* + - Case 1: the timing offset between UE’s FFT window and the target CSI-RS is smaller or equal to [CP]
      * FFS: Reuse the accuracy requirements of SS-RSRP
      * FFS on whether gNB needs to know that the timing offset is smaller or equal to CP and how to provide such information if needed
    - FFS: Case 2: the timing offset between UE’s FFT window and the target CSI-RS is larger than [CP]

Discussion:

Moderator: need to clarify

Apple:

Intra-frequency: timing offset between serving cell CSI-RS and target CSI-RS

Inter-frequency: maximum symbol-level offset between any two CSI-RS from different cell in the same frequency layer

Nokia: different understanding.

Timing offset between the target CSI-RS and the timing the UE is using to measure the CSI-RS

ZTE: different understanding

Intra-freq: UE is using serving cell timing

Apple: we need to specify this condition for testing purpose. UE’s FFT time cannot be used as the reference for the spec.

QC: prefer to change the definition

Agreement: Update the previous agreement as follows

Specify the following L3 CSI-RSRP measurement accuracy requirements

* + - Case 1: the timing offset between the reference measurement timing and the target CSI-RS in one layer is smaller or equal to [CP]
      * FFS: Reuse the accuracy requirements of SS-RSRP
      * FFS on whether gNB needs to know that the timing offset is smaller or equal to CP and how to provide such information if needed
    - FFS: Case 2: the timing offset between the reference measurement timing and the target CSI-RS in one layer is larger than [CP]
    - Reference measurement timing for one layer is the
      * Intra-frequency case: Serving cell timing
      * Inter-frequency case: Up to UE implementation and shall be based on the timing of one of the target cells
        + Note: UE may use a single or multiple reference measurement timings for different measurements on different symbols

**Decision:** The document was **noted**.

**R4-2017021 Email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (OPPO)*

**Discussion:**

The contribution summarized email discussion thread [97e][222] NR\_CSIRS\_L3meas\_RRM\_2. The email thread was moderated by Roy Hu (OPPO) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017033**.

**R4-2017033 Email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (OPPO)*

(Replaces R4-2017021)

**Discussion:**

The contribution summarized email discussion thread [97e][222] NR\_CSIRS\_L3meas\_RRM\_2. The email thread was moderated by Roy Hu (OPPO) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017292**.

**R4-2017292 Email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (OPPO)*

(Replaces R4-2017033)

**Discussion:**

The contribution summarized email discussion thread [97e][222] NR\_CSIRS\_L3meas\_RRM\_2. The email thread was moderated by Roy Hu (OPPO) and treated during RRM session chaired by Andrey Chervyakov (Intel).

GTW session (November 06, 2020)

Issue 1-1: The structure of test cases

1. Intra-frequency measurement

Agreement:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test No. | Test | Tentative section number | Company | Note |
| TC1 | SA event triggered reporting tests without gap for NR neighbor cell in FR1 | A6.6.x | CATT | Test with non-DRX |
| TC2 | SA event triggered reporting tests without gap for NR neighbor cell in FR2 | A7.6.x | Xiaomi | Test with DRX |
| TC3 | EN-DC event triggered reporting tests without gap for NR neighbor cell in FR1 | A4.6.x | Nokia | Test with DRX |
| TC4 | EN-DC event triggered reporting tests without gap for NR neighbor cell in FR2 | A5.6.x | Qualcomm | Test with non-DRX |

2. Inter-frequency measurement

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test No. | Test | Tentative section number | Company | Note |
| TC1 | SA event triggered reporting tests with gap (all NR cells in FR1） | **A6.6.y** | **CATT** | Test with DRX |
| TC2 | SA event triggered reporting tests with gap for NR neighbor cell in FR2（PCell in FR2） | **A7.6.y.2** | **ZTE** | Test with non-DRX |
| TC3 | EN-DC event triggered reporting tests with gap (all NR cells in FR1） | **A4.6.y** | Xiaomi | Test with non-DRX |
| TC4 | EN-DC event triggered reporting tests with gap for NR neighbor cell in FR2 (PScell in FR2） | **A5.6.y.1** | OPPO | Test with DRX |

 3. Measurement performance

|  |  |  |  |
| --- | --- | --- | --- |
| Test No. | Test | Tentative section number | Company |
| TC1 | SA: CSI-RSRP measurement accuracy for（all NR cells in FR1） | A6.7.x | CATT |
| TC2 | SA: CSI-RSRQ measurement accuracy for（all NR cells in FR1） | A6.7.y | **Xiaomi** |
| TC3 | SA: CSI-SINR measurement accuracy for（all NR cells in FR1） | A6.7.z | **Huawei** |
| TC4 | SA: CSI-RSRP measurement accuracy for NR neighbor cell in FR2 | A7.7.x | **Xiaomi** |
| TC5 | SA: CSI-RSRQ measurement accuracy for NR neighbor cell in FR2 | A7.7.y | **ZTE** |
| TC6 | SA: CSI-SINR measurement accuracy for NR neighbor cell in FR2 | A7.7.z | **MediaTek** |
| TC7 | EN-DC: CSI-RSRP measurement accuracy for（all NR cells in FR1） | A4.7.x | Nokia |
| TC8 | EN-DC: CSI-RSRQ measurement accuracy for（all NR cells in FR1） | A4.7.y | OPPO |
| TC9 | EN-DC: CSI-SINR measurement accuracy for（all NR cells in FR1） | A4.7.z | vivo |
| TC10 | EN-DC: CSI-RSRP measurement accuracy for NR neighbor cell in FR2 | A5.7.x | Qualcomm |
| TC11 | EN-DC: CSI-RSRQ measurement accuracy for NR neighbor cell in FR2 | A5.7.y | OPPO |
| TC12 | EN-DC: CSI-SINR measurement accuracy for NR neighbor cell in FR2 | A5.7.z | **Huawei** |
| Note: for each row in this table, two test cases, one for intra-frequency and one for inter-frequency, will be defined. | | | |

Issue 1-2: Whether both DRX and non-DRX need to be tested

Candidate options:

* Option 1(CATT, Xiaomi): Test both DRX and non-DRX cases based on the current test case list
  + Option 1a(Huawei, OPPO, Nokia): For DRX cycles, distribute short DRX and long DRX in the test cases with DRX.
  + Option 1b(MTK, QC, vivo): For DRX cycles,  short DRX applies in the test cases with DRX.
* Option 2(CMCC): non-DRX + short DRX + long DRX ( for each scenario)

Discussion:

MTK: slightly prefer short DRX. Ok with short DRX for FR2 and slightly longer for FR1.

QC: same view as MTK.

Agreement:

For test cases with DRX

* FR1: Use long DRX
* FR2: Use short DRX

1st round email discussion conclusions

**Topic #1: Test cases**

Issue 1-1-1: Whether to define requirements for scenario 1 and scenario 2 in R16?

Agreement: Specify requirements for both scenario 1 and 2:

* Scenario 1: CSI-RS resources and SSB are fully or partially overlapped in time domain.
* Scenario 2: CSI-RS resources and SSB are non-overlapped in time domain.

**Decision:** The document was **noted**.

#### 7.14.1 RRM core requirements maintenance (38.133) [NR\_CSIRS\_L3meas-Core]

**R4-2017223 WF on remaining issues on CSI-RS based L3 measurement requirements (core part)**

*Type: other For: discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **approved**.

**R4-2014188 CR on scheduling restriction for CSI-RS based intra-frequency measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1108 rev 2 Cat: B (Rel-16)  
  
 Source: Qualcomm CDMA Technologies*

(Replaces R4-2011822)

**Abstract:**

CSI-RS L3 measurement was introduced to RAN4 in Rel-16. The CR aims to add restrictions in the scheduling availability during CSI-RS L3 intra-frequency measurements. The CR is revised from R4-2012174 which was approved but not implemented.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017316**.

**R4-2017316 CR on scheduling restriction for CSI-RS based intra-frequency measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1108 rev 3 Cat: B (Rel-16)  
  
 Source: Qualcomm CDMA Technologies*

(Replaces R4-2014188)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017349**.

**R4-2017349 CR on scheduling restriction for CSI-RS based intra-frequency measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1108 rev 4 Cat: B (Rel-16)  
  
 Source: Qualcomm CDMA Technologies*

(Replaces R4-2017316)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **agreed**.

**R4-2014235 CR on CSSF with both CSI-RS and SSB**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1140 Cat: F (Rel-16)  
  
 Source: Apple*

**Abstract:**

Revise CSSF when CSI-RS resources for L3 measurement are considered on top of SSB.

R4-2012181 has been agreed in RAN4#96-bis. Due to editorial reason, it was not implemented. This CR is resubmitted based on v16.5.0

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017317**.

**R4-2017317 CR on CSSF with both CSI-RS and SSB**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1140 rev 1 Cat: F (Rel-16)  
  
 Source: Apple*

(Replaces R4-2014235)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **agreed**.

**R4-2014236 On remaining core issues of CSI-RS for L3 measurements**

*Type: discussion For: Agreement  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2014314 Discussions on the remaining issues for CSI-RS L3 core requirements**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm CDMA Technologies*

**Abstract:**

We intend to share our views regarding the remaining open issues for maintaining the core requirements e.g. measurement restriction and scheduling restriction.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2014413 CR for TS36.133, Adding requirements for CSI-RS based L3 measurement**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6962 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

CSI-RS based L3 measurement are defined in NR, and the requirements are missed in 36.133 in EN-DC and NE-DC mode.

The number of inter frequency carrers measurement for NR has changed from 7 to 8 due to introducing CSI-RS based L3 measurement.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017225**.

**R4-2017225 CR for TS36.133, Adding requirements for CSI-RS based L3 measurement**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6962 rev 1 Cat: B (Rel-16)  
  
 Source: CATT*

(Replaces R4-2014413)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **agreed**.

**R4-2014429 CR on abbreviations about CSI-RS based measurement in 38.133.**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1171 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

CSI-RS based L3 measurement was introduced in 38.133. Some abbreviations about CSI-RS measurement are used and need to be defined.

**Discussion:**

The secretary commented that the CR number 1171 is missing on the coversheet. See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017226**.

**R4-2017226 CR on abbreviations about CSI-RS based measurement in 38.133.**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1171 rev 1 Cat: F (Rel-16)  
  
 Source: CATT*

(Replaces R4-2014429)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **agreed**.

**R4-2014430 CR on CSI-RS based intra-frequency measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1172 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

The clarification of the number of cells for CSI-RS based intra-frequency measurement is in the wrong place.

**Discussion:**

The secretary commented that the CR number 1172 is missing on the coversheet. See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2014431 CR on CSI-RS based inter-frequency measurement.**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1173 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

Some requirements for CSI-RS based inter-frequency measurement are missed.

**Discussion:**

The secretary commented that the CR number 1173 is missing on the coversheet. See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2014432 CR on scheduling restriction for CSI-RS based intra-frequency measurement.**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1174 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

Scheduling restriction for CSI-RS based intra-frequency measurement is not complete.

**Discussion:**

The secretary commented that the CR number 1174 is missing on the coversheet. See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2014433 CR on CSI-RS configuration for mobility**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1175 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

CSI-RS based L3 measurement was introduced in 38.133. The CSI-RS configuration for mobility needs to be specified when defining test cases.

**Discussion:**

The secretary commented that the CR number 1175 is missing on the coversheet.

The secretary wondered what is the correct Category? It reads B on the coversheet but the CR is allocated for F. See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2014434 CR on conditions for NR CSI-RS based L3 measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1176 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

The conditions for NR CSI-RS based L3 measurement need to be defined when defining the performance requirements for CSI-RS based L3 measurement in 38.133.

**Discussion:**

The secretary commented that the CR number 1176 is missing on the coversheet.

The secretary wondered what is the correct Category? It reads B on the coversheet but the CR is allocated for F. See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017318**.

**R4-2017318 CR on conditions for NR CSI-RS based L3 measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1176 rev 1 Cat: B (Rel-16)  
  
 Source: CATT*

(Replaces R4-2014434)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **endorsed**.

**R4-2014530 Discussion on remaining issues for R16 CSI-RS based L3 measurements**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2014531 CR on R16 CSI-RS based L3 measurements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1186 Cat: F (Rel-16)  
  
 Source: vivo*

**Abstract:**

Capture last meeting agreements on the number of layers.

Remove the side condition for SSB measurement in clause 9.10.2.2 of TS 38.133

Remove the exact number of cells to be monitored in clause 9.10.2.3.

The description on relation between CSI-RS for RRM and CSI-RS for RLM is removed.

Avoid some duplication

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017227**.

**R4-2017227 CR on R16 CSI-RS based L3 measurements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1186 rev 1 Cat: F (Rel-16)  
  
 Source: vivo*

(Replaces R4-2014531)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **agreed**.

**R4-2014622 On remaining issues for CSI-RS based L3 measurement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2014623 Introduction of CSSF requirements for CSI-RS based L3 measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1190 Cat: F (Rel-16)  
  
 Source: MediaTek inc., CATT*

**Abstract:**

CR R4-2012181 was agreed in last RAN4 meeting but not implemented in the version 16.5.0. This CR implements the changes in R4-2012181 with changes to improve readability.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **postponed**.

**R4-2014660 Maintenance on CSI-RS based L3 requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

**Abstract:**

CSI-RS based L3 measurement requirements were completed in last meeting, some corrections in following aspects are needed to make the spec more clear:

In TS38.300, a note is added to clarify that extended CR for CSI-RS mobility is not supported in this release.

“NOTE 3:Extended CP for CSI-RS based measurement is not supported in this release.”

The requirements for intra-frequency measurements without gap is not implemented in this section

The requirements of number of cells to be monitored for intra/inter-frequency is not clear in the spec.

Some clause number and editorial error need to be fixed.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2014824 Discussion on remaining issues about CSI-RS based L3 measurement requirement**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2015489 Discussion on remaining issues for CSI-RS based L3 measurement**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2015490 CR on CSI-RS based intra-frequency measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1277 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

1. Based on RAN1’s discussion history, extended CP for CSI-RS based mobility measurement is not supported in Rel-16, so it implies the second condition of CP type comparison for intra-frequency measurement is always satisified in this release. In RAN2 a note is added to clarify this [R2-2007002].

2. [R4-2012261] was endorsed at RAN4#96e, however the CR was implemented mixed with positioning in clause 9.9.2.4 and 9.9.2.6.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017228**.

**R4-2017228 CR on CSI-RS based intra-frequency measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1277 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015490)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **agreed**.

**R4-2015491 CR on CSSF definition for CSI-RS based measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1278 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

[R4-2012181] on CSSF for CSI-RS based measurement was endorsed in RAN4#96e.

Some correction and clarification are made on top of [R4-2012181]:

It is agreed that Core/performance requirements in TS38.133 are specified based on the assumption that UE does not support simultaneous reception of CSI-RS and SSB. It means that CSI-RS L3 measurement and SSB based measurement are time division.

It is also agreed that Number of SSB layers should include SSB for mobility and that as associatedSSB for CSI-RS mobility.

Based on the above background, for CSSFoutsidegap, take EN-DC with FR1 only CA as an example, if SCell#1 is configured with both ssb-ConfigMobility and csi-rs-ResourceConfigMobility, SCell#2 is configured with csi-rs-ResourceConfigMobility only, SCell#3 is configured with ssb-ConfigMobility only, and there is one inter-frequency layer without gap, then SCell#1 and SCell#2 are regarded as 2 MOs including SSB and CSI-RS. The CSSF for each candidate shall be [2(for SCell#1) +2(for SCell#2)+ 1(for SCell#3)+1 (for inter-frequency layer w/o gap)].

Make some clarification on SSB MOs

The number of SSB measurement object shall include the total number of MOs with

-ssb-ConfigMobility configured, or

-ssb-ConfigMobility not configured but csi-rs-ResourceConfigMobility configured with associatedSSB.

If ssbfrequency, smtc1, smtc2 and ssbSubcarrierSpacing are same in multiple MOs, the multiple MOs are counted as one SSB measurement object.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **postponed**.

**R4-2015782 CR on CSI-RS capability requirements and time restriction**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1329 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The current wording for CSI-RS time restriction in unclear whether the case where different CSI-RS resources fall in different instances of the measurement window is supported or not.

It is agreed that the number of CSI-RS resources in any duration that equal to the length of a slot is no larger than UE reported capability, it is more clear to capture this agreement in specification for reference.

The definition of SSB frequency layer and CSI-RS frequency layer are missing in UE capability requirements, and it is more clear to capture the agreements in specification for reference.

There is no LTE-NR inter-RAT measurement, so in EN-DC the LTE PCell cannot configure CSI-RS measurement on NR carriers.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2016043 CSI-RS based intra-frequency measurement requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2016044 38.133 CR on CSI-RS based intra-frequency measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1352 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The secretary commented that the CR number 1352 is missing on the coversheet. See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2016045 38.133 CR on scheduling restrictions for CSI-RS based intra-frequency measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1353 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The scheduling restriction CR R4-2012174 for intra-frequency CSI-RS based measurements were not implemented due to unclear clause numbering. In addition, the scheduling restriction was not concluded for TDD and FR2 scenarios. And the impact to SSB-based intra-frequency measurements is not reflected.

**Discussion:**

The secretary commented that the CR number 1353 is missing on the coversheet. See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

#### 7.14.2 RRM perf. requirements (38.133) [NR\_CSIRS\_L3meas-Perf]

**R4-2017224 WF on performance requirements of CSI-RS based L3 measurement**

*Type: other For: discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017367**.

**R4-2017367 WF on performance requirements of CSI-RS based L3 measurement**

*Type: other For: discussion  
 Source: CATT*

(Replaces R4-2017224)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **approved**.

**R4-2017388 Draft Big CR: Introduction of Rel-16 CSI-RS based L3 measurement RRM performance requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: CATT*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2017389 Draft Big CR: Introduction of Rel-16 CSI-RS based L3 measurement RRM test cases**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2014666 RRM test cases for CSI-RS L3 measurement performance**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

**Abstract:**

The CSI-RS based L3 RRM requirements were introduced in Rel-16, hence the test cases to verify the corresponding performance requirements shall be introduced.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017314**.

**R4-2017314 RRM test cases for CSI-RS L3 measurement performance**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

(Replaces R4-2014666)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **endorsed**.

**R4-2015213 CR on introduce the gain to CSI-RSRP measurements point in FR1 and FR2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

**Abstract:**

The CSI-RS based intra-frequency and inter-frequecny measurements were introduced in Rel-16, hence the gain to CSI-RSRP measurements point in FR1 and FR2 shall be introduced.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **endorsed**.

**R4-2017315 CR on introduce the gain to CSI-RSRP measurements point in FR1 and FR2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **withdrawn**.

##### 7.14.2.1 General [NR\_CSIRS\_L3meas-Perf]

**R4-2014288 CR on introducing CSI-RS configurations for RRM**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1151 Cat: B (Rel-16)  
  
 Source: Qualcomm CDMA Technologies*

**Abstract:**

The core requirements were completed in discussions and specified during R4 96-e. This CR aims to introduce the CSI-RS configurations for RRM since the existing CSI-RS configurations are employed for L1 use.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017337**.

**R4-2017337 CR on introducing CSI-RS configurations for RRM**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1151 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm CDMA Technologies*

(Replaces R4-2014288)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **endorsed**.

**R4-2014435 Work plan for CSI-RS based L3 measurements**

*Type: Work Plan For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017229**.

**R4-2017229 Work plan for CSI-RS based L3 measurements**

*Type: Work Plan For: Approval  
 Source: CATT*

(Replaces R4-2014435)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **approved**.

**R4-2014436 Updated link-level simulation assumptions for CSI-RS based L3 measurements**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017230**.

**R4-2017230 Updated link-level simulation assumptions for CSI-RS based L3 measurements**

*Type: other For: Approval  
 Source: CATT*

(Replaces R4-2014436)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **approved**.

**R4-2014659 Discussion on performance requirements for CSI-RS L3 measurements**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2014664 CR on side conditions for CSI-RS based intra-frequency and inter-frequency measurements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

**Abstract:**

The CSI-RS based intra-frequency and inter-frequecny measurements were introduced in Rel-16, hence the corresponding conditions for CSI-RS L3 measurements shall be introduced.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2014790 Discussion on accuracy requirements for CSI-RS L3 measurements**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2016046 Discussion on the performance of CSI-RS based intra-frequency measurements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

###### 7.14.2.1.1 CSI-RSRP requirements [NR\_CSIRS\_L3meas -Perf]

**R4-2014354 Simulation results on CSI-RS based L3 measurements for RSRP**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm CDMA Technologies*

**Abstract:**

We provide the simulation results for CSI-RS based RSRP subject to certain cell timing difference and reveal the impact on defining the performance test cases in this paper

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2014437 Simulation results for CSI-RSRP measurement**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2014439 Discussion on performance requirement for CSI-RSRP**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2014441 CR on performance requirement for CSI-RSRP L3 measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1177 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

The performance requirements for CSI-RSRP L3 measurement need to be specified.

**Discussion:**

The secretary commented that the CR number 1177 is missing on the coversheet. See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2014624 CSI-RSRP measurement accuracy requirements**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2014661 CR on CSI-RSRP performance requirements for CSI-RS based measurements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

**Abstract:**

The CSI-RS based intra-frequency and inter-frequecny measurements were introduced in Rel-16, hence the corresponding performance requirements for CSI-RS L3 measurements shall be introduced.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2014703 Simulation results for CSI-RSRP measurement**

*Type: discussion For: Information  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2014791 CR to TS 38.133 on CSI-RSRP measurement accuracy(section 10.1)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

**Abstract:**

CSI-RSRP measurement performance requirements are specified:

- Intra-frequency measurement accuracy for FR1

- Intra-frequency measurement accuracy for FR2

- Inter-frequency measurement accuracy for FR1

- Inter-frequency measurement accuracy for FR2

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2015783 Discussion on CSI-RSRP accuracy and report mapping**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2015784 CR to introduce CSI-RSRP accuracy requirements and report mapping**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

CSI-RSRP accuracy and report mapping need to be defined.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2016047 38.133 CR on the intra-frequency CSI-RSRP accuracy requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1354 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The performance requirements for the CSI-RS based intra-frequency measurement needs to be specified.

**Discussion:**

The secretary commented that the CR number 1354 is missing on the coversheet. See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017319**.

**R4-2017319 38.133 CR on the intra-frequency CSI-RSRP accuracy requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1354 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016047)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **endorsed**.

**R4-2016048 38.133 CR on the conditions for NR intra-frequency CSI-RS based measurements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1355 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In current TS 38.133 Annex B, only the conditions for NR intra-frequency measurements based on SSBs are available. The conditions for CSI-RS based intra-frequency measurement needs to be specified.

**Discussion:**

The secretary commented that the CR number 1355 is missing on the coversheet. See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2016049 Simulation results for CSI-RS based measurements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

###### 7.14.2.1.2 CSI-RSRQ requirements [NR\_CSIRS\_L3meas -Perf]

**R4-2014438 Simulation results for CSI-RSRQ measurement**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2014440 Discussion on performance requirement for CSI-RSRQ**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2014442 CR on performance requirement for CSI-RSRQ L3 measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1178 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

The performance requirements for CSI-RSRQ L3 measurement need to be specified.

**Discussion:**

The secretary commented that the CR number 1178 is missing on the coversheet. See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017320**.

**R4-2017320 CR on performance requirement for CSI-RSRQ L3 measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1178 rev 1 Cat: B (Rel-16)  
  
 Source: CATT*

(Replaces R4-2014442)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017348**.

**R4-2017348 CR on performance requirement for CSI-RSRQ L3 measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1178 rev 2 Cat: B (Rel-16)  
  
 Source: CATT*

(Replaces R4-2017320)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **endorsed**.

**R4-2014662 CR on CSI-RSRQ performance requirements for CSI-RS based L3 measurements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

**Abstract:**

The CSI-RS based intra-frequency and inter-frequecny measurements were introduced in Rel-16, hence the corresponding performance requirements for CSI-RS L3 measurements shall be introduced.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2014792 CR to TS 38.133 on CSI-RSRQ measurement accuracy(section 10.1)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

**Abstract:**

CSI-RSRQ measurement performance requirements are specified:

- Intra-frequency measurement accuracy for FR1

- Intra-frequency measurement accuracy for FR2

- Inter-frequency measurement accuracy for FR1

- Inter-frequency measurement accuracy for FR2

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2015785 Discussion on CSI-RSRQ accuracy requirements and report mapping**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2015786 CR to introduce CSI-RSRQ accuracy requirements and report mapping**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

CSI-RSRQ accuracy and report mapping need to be defined.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

###### 7.14.2.1.3 CSI-SINR requirements [NR\_CSIRS\_L3meas -Perf]

**R4-2014443 CR on performance requirement for CSI-SINR L3 measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1179 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

The performance requirements for CSI-SINR L3 measurement need to be specified.

**Discussion:**

The secretary commented that the CR number 1179 is missing on the coversheet. See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2014625 CSI-SINR measurement accuracy requirements**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2014663 CR on CSI-SINR performance requirements for CSI-RS based L3 measurements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

**Abstract:**

The CSI-RS based intra-frequency and inter-frequecny measurements were introduced in Rel-16, hence the corresponding performance requirements for CSI-RS L3 measurements shall be introduced.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **merged**.

**R4-2015787 Discussion on CSI-SINR accuracy requirements and report mapping**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **noted**.

**R4-2015788 CR to introduce CSI-SINR accuracy requirements and report mapping**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

CSI-SINR accuracy and report mapping need to be defined.

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **revised to R4-2017321**.

**R4-2017321 CR to introduce CSI-SINR accuracy requirements and report mapping**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015788)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **endorsed**.

##### 7.14.2.2 Test cases [NR\_CSIRS\_L3meas-Perf]

**R4-2014189 Draft test case CR on EN-DC event triggered reporting tests without gap for NR neighbor cell in FR2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm CDMA Technologies*

**Abstract:**

The core requirements were completed in discussions and specified during R4 96-e. This CR aims to introduce the delay test case for CSI-RS based intra-frequency measurement in the case of EN-DC event triggered reporting tests without gap for NR neighbor cell in FR2

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017231**.

**R4-2017231 Draft test case CR on EN-DC event triggered reporting tests without gap for NR neighbor cell in FR2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm CDMA Technologies*

(Replaces R4-201418)

**Discussion:**

See email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 in R4-2017020.

**Decision:** The document was **endorsed**.

**R4-2014287 Draft test case CR on EN-DC CSI-RSRP measurement accuracy for NR neighbor cell in FR2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm CDMA Technologies*

**Abstract:**

The core requirements were completed in discussions and specified during R4 96-e. This CR aims to introduce the test case in the case of EN-DC CSI-RS measurement for NR neighbor performance cell in FR2

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017232**.

**R4-2017232 Draft test case CR on EN-DC CSI-RSRP measurement accuracy for NR neighbor cell in FR2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm CDMA Technologies*

(Replaces R4-2014287)

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **endorsed**.

**R4-2014444 Test case for CSI-RS based L3 measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1180 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

The test cases for CSI-RS based L3 measurement need to be defined.

**Discussion:**

The secretary commented that the CR number 1180 is missing on the coversheet. See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017233**.

**R4-2017233 Test case for CSI-RS based L3 measurement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1180 rev 1 Cat: B (Rel-16)  
  
 Source: CATT*

(Replaces R4-2014444)

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **endorsed**.

**R4-2014532 CR on test cases for EN-DC CSI-SINR measurement accuracy**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: vivo*

**Abstract:**

Introduce test case for EN-DC CSI-SINR measurement accuracy

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017312**.

**R4-2017312 CR on test cases for EN-DC CSI-SINR measurement accuracy**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: vivo*

(Replaces R4-2014532)

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **endorsed**.

**R4-2014626 Introduction of test case for CSI-SINR in SA FR2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

**Abstract:**

Add the test case for CSI-SINR measurement accuracy for FR2 SA

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017235**.

**R4-2017235 Introduction of test case for CSI-SINR in SA FR2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: MediaTek inc.*

(Replaces R4-2014626)

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **endorsed**.

**R4-2014665 RRM test cases for CSI-RS L3 intra-frequency and inter-frequency measurements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

**Abstract:**

The CSI-RS based L3 RRM requirements were introduced in Rel-16, hence the test cases to verify the corresponding requirement shall be introduced.

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017234**.

**R4-2017234 RRM test cases for CSI-RS L3 intra-frequency and inter-frequency measurements**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Xiaomi*

(Replaces R4-2014665)

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **endorsed**.

**R4-2014699 Discussion on test cases for CSI-RS based RRM measurement**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **noted**.

**R4-2014793 CR to TS 38.133: EN-DC event triggered reporting tests for NR neighbour cell in FR2 (PScell in FR1) for CSI-RS L3 inter-frequency measurements(A.5.6.x)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

**Abstract:**

EN-DC event triggered reporting tests with gap for NR neighbour cell in FR2 (PScell in FR1) for inter-frequency measurement (when DRX is not used) are specified.

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017236**.

**R4-2017236 CR to TS 38.133: EN-DC event triggered reporting tests for NR neighbour cell in FR2 (PScell in FR1) for CSI-RS L3 inter-frequency measurements(A.5.6.x)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

(Replaces R4-2014793)

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017341**.

**R4-2017341 CR to TS 38.133: EN-DC event triggered reporting tests for NR neighbour cell in FR2 (PScell in FR2) for CSI-RS L3 inter-frequency measurements(A.5.6.x)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

(Replaces R4-2017236)

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **endorsed**.

**R4-2014794 CR to TS 38.133: TC for EN-DC CSI-RSRQ measurement accuracy for all NR cells in FR1(A.4.7.x)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

**Abstract:**

The test cases for CSI-RSRQ measurement performance requirements are specified:

- EN-DC Intra-frequency measurement accuracy with FR1 serving cell and FR1 target cell

- EN-DC Inter-frequency measurement accuracy with FR1 serving cell and FR1 target cell

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017310**.

**R4-2017310 CR to TS 38.133: TC for EN-DC CSI-RSRQ measurement accuracy for all NR cells in FR1(A.4.7.x)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

(Replaces R4-2014794)

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **endorsed**.

**R4-2014795 CR to TS 38.133: TC for EN-DC CSI-RSRQ measurement accuracy for all NR cells in FR2(A.5.7.x)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

**Abstract:**

The test cases for CSI-RSRQ measurement performance requirements are specified:

- EN-DC Intra-frequency measurement accuracy with FR2 serving cell and FR2 target cell

- EN-DC Inter-frequency measurement accuracy with FR2 serving cell and FR2 target cell

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017311**.

**R4-2017311 CR to TS 38.133: TC for EN-DC CSI-RSRQ measurement accuracy for all NR cells in FR2(A.5.7.x)**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: OPPO*

(Replaces R4-2014795)

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **endorsed**.

**R4-2015586 Draft CR on test case for SA CSI-RS based measurement in FR2 and CSI-RSRQ accuracy in FR2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: ZTE*

**Abstract:**

Test cases for CSI-RS based measurement need to be introduced to verify corresponding core requirements and accuracy requirements.

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017237**.

**R4-2017237 Draft CR on test case for SA CSI-RS based measurement in FR2 and CSI-RSRQ accuracy in FR2**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: ZTE*

(Replaces R4-2015586)

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **endorsed**.

**R4-2015789 CR to introduce TC for CSI-SINR measurement accuracy for FR1 SA and FR2 EN-DC**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

RRM core requirements for CSI-RS measurement are defined, but there is no RRM test case for CSI-RS measurement.

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017313**.

**R4-2017313 CR to introduce TC for CSI-SINR measurement accuracy for FR1 SA and FR2 EN-DC**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015789)

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **endorsed**.

**R4-2016050 38.133 CR on the test case of EN-DC event triggered reporting for intra-frequency CSI-RS based measurements in FR1**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1356 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The test case for E-UTRAN-NR event triggered reporting in FR1 needs to be specified for the CSI-RS based intra-frequency measurements.

**Discussion:**

The secretary commented that the CR number 1356 is missing on the coversheet. See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017238**.

**R4-2017238 38.133 CR on the test case of EN-DC event triggered reporting for intra-frequency CSI-RS based measurements in FR1**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1356 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016050)

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **endorsed**.

**R4-2016051 38.133 CR on the test cases of EN-DC measurement accuracy in FR1 for CSI-RS based intra-frequency and inter-frequency measurements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1357 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The test cases to verify the accuracy performance requirements for the CSI-RS based measurements in FR1 needs to be specified.

**Discussion:**

The secretary commented that the CR number 1357 is missing on the coversheet. See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **revised to R4-2017239**.

**R4-2017239 38.133 CR on the test cases of EN-DC measurement accuracy in FR1 for CSI-RS based intra-frequency and inter-frequency measurements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1357 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016051)

**Discussion:**

See email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 in R4-2017021.

**Decision:** The document was **endorsed**.

### 7.15 NR support for high speed train scenario [NR\_HST]

#### 7.15.1 RRM core requirements maintenance (38.133) [NR\_HST-Core]

**R4-2017022 Email discussion summary for [97e][223] NR\_HST\_RRM**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

**Discussion:**

The contribution summarized email discussion thread [97e][223] NR\_HST\_RRM. The email thread was moderated by Jingjing Chen (China Mobile Com. Corporation) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017293**.

**R4-2017293 Email discussion summary for [97e][223] NR\_HST\_RRM**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

(Replaces R4-2017022)

**Discussion:**

The contribution summarized email discussion thread [97e][223] NR\_HST\_RRM. The email thread was moderated by Jingjing Chen (China Mobile Com. Corporation) and treated during RRM session chaired by Andrey Chervyakov (Intel).

1st round email discussion conclusions

**Topic #1: RRM core requirements**

Issue 1-1: aligning table caption

Agreement: table caption is aligned in the way to include RAN2 IE name, e.g. “…for UE configured with *highSpeedMeasFlag-r16*”

**Topic #2: RRM performance part**

Issue 2-1: aligning section title

Agreement: section title is aligned in the way to include RAN2 IE name, e.g. “…for UE configured with *highSpeedMeasFlag-r16*”

GTW session (November 10, 2020)

1. R4-2015494

Moderator

* This CR is on the RSRP and RSRQ measurement accuracy. This CR explicitly point out that the legacy accuracy of FR1 intra-frequency SSB based measurement accuracy shall be applicable when highSpeedMeasFlag-r16 is configured. Companies have different understanding on whether we need these CR or not.
* Background: In the WF R4-2008627, there is applicability rule: Non-HST RRM requirement applies to HST scenario when no corresponding HST RRM enhancement is specified.
* Based on above background, one company think this CR is not needed. While the proponent of this CR point out that considering that FR1 inter-frequency SSB measurement, FR2 intra-frequency and inter-frequency SSB measurement are not considered in this HST WI, it is better to clarify which measurement accuracy applied to HST.

Discussion:

* Nokia: The CR uses explicit indication of the flag. In the past we used an applicability rule. The CR may cause some ambiguity and that other requirements do not apply
* QC: Support the CR
* HW: The agreement in WF R4-2008627 is for the Core part. For Perf part we suggest to explicitly mention the capability. Agree with Nokia that there may be some ambiguity for the Core part and we can address in the next meeting.
* Nokia: we need to be consistent. CR is ok.
* Chair: CR is agreeable. companies can bring further CRs in the maintenance stage to clarify the HST applicability rules

2. R4-2014964 / R4-2014981

Moderator

* Companies have different understanding on whether we need these CRs, and if necessary, whether we need the text on reusing the non-HST requirements to the inter-RAT layer of higher priority when in good condition (Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ)

Discussion

* QC: CR not needed but we can compromise
* Nokia: ok with CR. Can address the applicability later.
* Chair: CRs are agreeable under assumption that the 1st round comments on table captions are implemented.

3. R4-2016215

Moderator

* Companies have question on how the requirement of 1920ms in “No later than [1920ms] plus 80 slots from the beginning of time period T2” is derived. And the proponent of this CR are also open to have discussion on this value.

Discussion

* QC: we are ok with value but prefer to double check. Prefer to keep value in []

RAN2 IE name in the section title and table caption

Proposal

* For NR-LTE inter-RAT measurement, highSpeedMeasFlag-r16 is used in title caption (section title)
* For LTE-NR inter-RAT measurement, highSpeedInterRAT-NR-r16 is used in title caption (section title)

**Decision:** The document was **noted**.

**R4-2014691 38.133 CR on CSSFintra for measurement period for intra-frequency measurements in connected mode for Rel-16 NR HST**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1194 Cat: F (Rel-16)  
  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **revised to R4-2017242**.

**R4-2017242 38.133 CR on CSSFintra for measurement period for intra-frequency measurements in connected mode for Rel-16 NR HST**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1194 rev 1 Cat: F (Rel-16)  
  
 Source: CMCC*

(Replaces R4-2014691)

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **agreed**.

**R4-2014964 CR on IDLE state cell re-selection requirements for HST in 38.133**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1217 Cat: F (Rel-16)  
  
 Source: vivo,Huawei, HiSilicon*

**Abstract:**

As agreed in last meeting, for higher priority carrier search and measurement, there is no requirement enhancements for high speed scenario.

There is no description on how to indicate a carrier that should meet high speed performance

The requirement for 2.56s DRX cycle length is missing.

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **revised to R4-2017240**.

**R4-2017240 CR on IDLE state cell re-selection requirements for HST in 38.133**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1217 rev 1 Cat: F (Rel-16)  
  
 Source: vivo,Huawei, HiSilicon*

(Replaces R4-2014964)

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **agreed**.

**R4-2014965 CR on IDLE state cell-reselection requirements for HST in 36.133**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1218 Cat: F (Rel-16)  
  
 Source: vivo,Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **withdrawn**.

**R4-2014981 CR on IDLE state cell re-selection requirements for HST in 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6964 Cat: F (Rel-16)  
  
 Source: vivo, Huawei, HiSilicon*

**Abstract:**

As agreed in last meeting, for higher priority carrier search and measurement, there is no requirement enhancements for high speed scenario.

There is no description on how to indicate a carrier that should meet high speed performance

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **revised to R4-2017241**.

**R4-2017241 CR on IDLE state cell re-selection requirements for HST in 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6964 rev 1 Cat: F (Rel-16)  
  
 Source: vivo, Huawei, HiSilicon*

(Replaces R4-2014981)

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **agreed**.

**R4-2015156 Correction to high speed idle mode core requirement**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1228 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The title and table number for Table 4.2.2.3-1 has incorrectly been changed to “4.2.2.3-2 Tdetect,NR\_Intra, Tmeasure,NR\_Intra and Tevaluate,NR\_Intra for UE configured with highSpeedMeasFlag-r16 (Frequency range FR1)”. The title of table 4.2.2.3-2 needs to be changed to reflect the correct name of the high speed meas flag now that it is agreed in RAN2.

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **not pursued**.

**R4-2015492 Correction on SSB based L1-RSRP Reporting for HST**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1279 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For L1-RSRP reporting, when DRX ≤320ms, K = 1 when TSSB ≤ 40 ms and RRM enhancements for high speed are configured; otherwise K = 1.5. Thus the factor 1.5 shall be replaced by K.

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **merged**.

**R4-2015804 Correction of CR0972 implementation**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1331 Cat: F (Rel-16)  
  
 Source: ETSI MCC*

**Abstract:**

Table 4.2.2.3-1 and Table 4.2.2.3-2 titles are not correctly implemented.

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **agreed**.

**R4-2016207 CR to TS 38.133: Corrections to Tables 9.5.4.1-1 and 9.5.4.2-1.**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1370 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

There is an error for the requirement in Tables 9.5.4.1-1 and 9.5.4.2-1.

The signalling for RRM enhancments for HST needs to be updated to reflect the newly specified RAN2 IE name.

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **agreed**.

#### 7.15.2 RRM perf. requirements (38.133) [NR\_HST-Perf]

**R4-2017252 Big CR: NR HST RRM performance requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1411 Cat: B (Rel-16)  
  
 Source: CMCC*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

##### 7.15.2.1 General [NR\_HST-Perf]

**R4-2014220 On HST intra-frequency measurement requirements**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **noted**.

**R4-2014221 CR for HST intra-frequency measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1137 Cat: F (Rel-16)  
  
 Source: Apple*

**Abstract:**

Scaling factor CSSF is missing in high speed intra-frequency measurement requirement.

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **merged**.

**R4-2014695 CR on release independent for Rel.16 NR HST RRM requirements**

*Type: CR For: Agreement  
 38.307 v15.6.0 CR-0033 Cat: B (Rel-15)  
  
 Source: CMCC*

**Abstract:**

In last RAN4 meeting, it was agreed that Rel.16 NR HST RRM requirements are release independent from Rel-15.

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **revised to R4-2017243**.

**R4-2017243 CR on release independent for Rel.16 NR HST RRM requirements**

*Type: CR For: Agreement  
 38.307 v15.6.0 CR-0033 rev 1 Cat: B (Rel-15)  
  
 Source: CMCC*

(Replaces R4-2014695)

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **agreed**.

**R4-2014697 CR on release independent for Rel.16 NR HST RRM requirements**

*Type: CR For: Agreement  
 38.307 v16.4.0 CR-0035 Cat: B (Rel-16)  
  
 Source: CMCC*

**Abstract:**

In last RAN4 meeting, it was agreed that Rel.16 NR HST RRM requirements are release independent from Rel-15.

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **revised to R4-2017244**.

**R4-2017244 CR on release independent for Rel.16 NR HST RRM requirements**

*Type: CR For: Agreement  
 38.307 v16.4.0 CR-0035 rev 1 Cat: B (Rel-16)  
  
 Source: CMCC*

(Replaces R4-2014697)

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **agreed**.

**R4-2015494 Accuracy requirements for NR high speed**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

The R16 HST RRM enhancements are applied on FR1 intra-frequency SSB based measurement. There are no enhancement on FR1 inter-frequency SSB measurement, FR2 intra-frequency and inter-frequency SSB measurement. And there are no enhancement on CSI-RS based measurement. Thus for the measurement accuracy, it shall be explicitly point out that the legacy accuracy of FR1 intra-frequency SSB based measurement (including RSRP, RSRQ and SINR) shall be applicable when highSpeedMeasFlag-r16 is configured. In the last meeting, the accuracy of SINR under high speed has been agreed. This contribution focus on RSRP and RSRQ.

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **endorsed**.

**R4-2017245 Accuracy requirements for NR high speed**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **withdrawn**.

##### 7.15.2.2 Test cases [NR\_HST-Perf]

**R4-2014533 CR on test case for EUTRAN-NR cell re-selection in HST**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: vivo*

**Abstract:**

Introduce test case for reselection to higher priority FR1 NR carrier in HST scenario (Note: If R4-2014981 is agreed then this may not needed.)

Introduce test case for reselection to lower priority FR1 NR carrier in HST scenario (Note: No related test case for R15 non-HST requirements and probably not needed)

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **revised to R4-2017246**.

**R4-2017246 CR on test case for EUTRAN-NR cell re-selection in HST**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: vivo*

(Replaces R4-2014533)

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **endorsed**.

**R4-2014630 NR HST test case discussion**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **noted**.

**R4-2014631 CR-NR HST RRM test cases**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm, Inc.*

**Abstract:**

The additional RRM tests for NR HST are not specified.

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **revised to R4-2017247**.

**R4-2017247 CR-NR HST RRM test cases**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Qualcomm, Inc.*

(Replaces R4-2014631)

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **endorsed**.

**R4-2014692 Draft CR on NR-NR intra-frequency reselection for FR1 for high speed scenario**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: CMCC*

**Abstract:**

In last RAN4 meeting, the test cast list for high speed train scenario was agreed. This CR provide the test case on NR-NR intra-frequency cell reselection for FR1 based on the agreements.

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **revised to R4-2017248**.

**R4-2017248 Draft CR on NR-NR intra-frequency reselection for FR1 for high speed scenario**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: CMCC*

(Replaces R4-2014692)

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **endorsed**.

**R4-2015147 Test cases for NR -NR cell identification in connected mode for high speed**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1219 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Add test cases for cell identification in high speed condition

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **revised to R4-2017249**.

**R4-2017249 Test cases for NR -NR cell identification in connected mode for high speed**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1219 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015147)

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **endorsed**.

**R4-2015493 Test cases for inter-RAT cell identification in connected mode for HST**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

The following test cases for high speed are needed to be specified:

1. NR-EUTRA inter-RAT event triggered reporting test under DRX in FR1

2. EUTRA-NR inter-RAT event triggered reporting for FR1 with SSB time index detection when DRX is used

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **revised to R4-2017250**.

**R4-2017250 Test cases for inter-RAT cell identification in connected mode for HST**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015493)

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **endorsed**.

**R4-2016215 CR to TS 38.133: Test cases for L1-RSRP measurement for beam reporting for NR HST**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Test cases for L1-RSRP measurement for beam reporting are not defined for NR HST.

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **revised to R4-2017251**.

**R4-2017251 CR to TS 38.133: Test cases for L1-RSRP measurement for beam reporting for NR HST**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016215)

**Discussion:**

See email discussion summary for [97e][223] NR\_HST\_RRM in R4-2017022.

**Decision:** The document was **endorsed**.

#### 7.15.3 Demodulation and CSI requirements (38.101-4 / 38.104) [NR\_HST-Perf]

|  |
| --- |
| GTW session 11.5th  Topics from email thread [326]  **Issue 1-1: MCS**   * + **Option 1 (ZTE, Apple): MCS 13 based on 64QAM table (same as HST-SFN)**   + **Option 2 (Intel, Huawei, CMCC, Ericsson): MCS 17 based on 64QAM tables**   **Recommended WF: Can we go with option2?**  Agreement: **MCS 17 based on 64QAM tables**  **Issue 1-2: Scheduling in TDD special slot**   * Option 1 (Intel, Huawei, ZTE, Apple, vivo, Ericsson): Scheduled PDSCH in TDD special slots and the special slot configuration as S: 6D 4G 4U. * Option 2 (QC): Not schedule PDSCH in TDD special slots for HST-DPS TDD tests   **Recommended WF: Can we go with option 1?**  QC: DPS schema 1a, huge jump see from one RRH to another RRH; due to that point, the estimation on special slots have performance loss due to DMRS pattern (1 DMRS symbol only). Time vary channel observed at the transition points.  Intel: We have results no show performance impact.  E//: Similar view as Intel, for transition period only 1% percentile in test time, the impact on performance neglectable.  Huawei: Similar view as Intel, the operation under transition period up to implementation.  Vivo: Similar view as Intel, lower MCS in special slot.  **Tentative Agreement:** Scheduled PDSCH in TDD special slots and the special slot configuration as S: 6D 4G 4U as baseline based on the assumption that no obvious performance degradation compared to no slots scheduled in special slot. (pending on further check by QC)  **Issue 1-3: Number of active TCI states in DPS transmission scheme 1b**   * Option 1 (Apple, Huawei, CMCC, QC, Apple, ZTE, vivo, Ericsson): with 2 active TCI states. * Option 2 (Intel): with 2 and 3 active TCI states. * Option 3 (Intel): Define requirements only for scenario with more than 2 active TCI states.   **Recommended WF: Can we go with option 1?**  Agreement:  Go with option 1 in Rel-16 , RAN4 can decide whether to further discuss test cases with >2 active TCI states in Rel-17 timeframe i.e. in Rel-17 FR1 HST WI.  **Issue 1-4: Modified step 3 for transmission scheme 1a**  **Issue 1-5: Modified test setup for transmission scheme 1a**  **Issue 1-7: Transmission scheme 1b with 2 active TCI states**  Agreement: In test setup for DPS 1a (Step3), PDSCH associated with TCI #0 is transmitted during the slots from 0 to [n] + HARQ needed time + 3ms.   * Note: MAC CE transmitted in slot n   **[Test setup for transmission scheme 1a~~:~~**   * Two RRH s of RRH#(2k) and RRH#(2k+1) are assumed, and SSB#0 is transmitted from both TRPs, where k is the RRH number with k=0,1, 2, …   + UE is configured with TCI#(k mod 2) and TCI#(k+1 mod 2) that are associated with TRS#(k mod 2) and TRS#(k+1 mod 2) transmitted from RRH#(2k) and RRH#(2k+1) respectively by RRC signalling tci-StatesToAddModList in the PDSCH-Config and tci-PresentInDCI is not configured;   + All the configured TCI states are known to UE. UE is configured with NZP-CSI-RS resource for L1-RSRP measurements by RRC signaling nzp-CSI-RS-ResourceSet within the CSI-ResourceConfig and periodic CSI reporting by setting reportConfigType to periodic and reportQuantity to cri-RSRP (Note: reported L1-RSRP mesurements are not tested) * TE actives TCI #0 for PDCCH by “TCI State Indication for UE-specific PDCCH MAC CE”; * PDSCH associated with TCI #0 is transmitted during the slots from 0 to (n-1) + HARQ needed time + 3ms ~~+ first TRS + TRS processing time;~~ * In slot n TE start triggering TCI state switching command to TCI #1 by “TCI State Indication for UE-specific PDCCH MAC CE”; * PDSCH associated with TCI #1 is transmitted in slots from n + HARQ needed time + 3ms + first TRS + TRS processing time to N. * PDSCH associated with TCI #(k mod 2) (k=0,1,2,…) is transmitted in slot from max((2k-1)n + HARQ needed time + 3ms +[ first TRS + TRS processing time], 0) to ((2k+1)n-1) + HARQ needed time + 3ms, where n slots are equivalent to time that needed to pass middle point between two RRHs, N slots is equivalent to time that needed to pass second RRH. And k is the RRH number in the channel model.]   **Issue 1-6: SSB and TRS transmission**  Agreement: Every RRH has to transmit QCL’ed SSB and TRS for every TCI state used in the DPS schemes  **Issue 1-9: Switch command**  Agreement: The switch command is transmitted via MAC CE, the corresponding PDSCH carrying that MAC CE should be ensured to be decoded successfully and MCS 4 should be used.  **Issue 1-10: PDCCH and PDSCH setting during the transition time**   * + Option 1 (Apple, ZTE): For DPS transmission mode 1a, PDCCH/PDSCH are DTXed from the time gNB indicate MAC CE TCI state switch + HARQ processing time + 3ms, to the time UE received and processed the first TRS from the new TRP.   + Option 2 (Intel): * Use same SNR point for all DPS Tx schemes requirements definition: * Skip PDSCH allocation on slots with TRS transmission * Skip PDSCH allocation on slots from n to m, where n slots are equivalent to time that needed to pass middle point between two RRH and m is a slot which corresponds to HARQ needed time on MAC CE command in DPS scheme 1a.   + Option 3 (Ericsson): TE does not consider the transition period for throughput calculation   **Recommended WF: Need further discussion**  CMCC: for 1a, option 1; for 1b, no transition time needed.  Intel: Option 1 and option 3 same actually. For 1b, the transition period should be same no need to differentiate 1a and 1b with option 1.  QC: Option 1 and 3 same. This only applied for option 1a, no additional processing time for 1b if UE support multiple active TCI states, that’s the key difference for 1a and 1b. Option 1/3 aligned with RRM core requirements assumption.  Huawei: To unify the test set-up among option 1a and option 1b.  E///: Agree with option 1/3 same. During DTXed period, means OCNG transmitted?  QC: We don’t think unified test set-up useful here for 1a and 1b.  Agreement: For transmission scheme 1a :  For DPS transmission mode 1a, PDCCH/PDSCH are DTXed from the time gNB indicate MAC CE TCI state switch + HARQ processing time + 3ms, to the time UE received and processed the first TRS from the new TRP.  TE does not consider the transition period for throughput calculation  OCNG pattern will be applied for DTXed period.  **Issue 1-11: Extra test metric for DPS requirements**   * Proposals   + Option 1 (Huawei): For DPS requirements definition, besides the 70% maximum throughput, define an extra test metric that,     - for DPS 1a, UE should meet probability of 99% (ACK and NACK) transmission for all PDSCH scheduled at each switching time point of (2k+1)n + HARQ needed time + 3ms + first TRS + TRS processing during the test     - for DPS 1b with 2 active TCI states, UE meet probability of 99% (ACK and NACK) transmission for all PDSCH scheduled at each switching time point of (2k+1)n + HARQ needed time + 3ms during the test     - for DPS 1b with more than 2 active TCI state, UE meet probability of 99% (ACK and NACK) transmission for all PDSCH scheduled at each switching time point of (2k+1)n+1 during the test * Recommended WF: Need further discussion   Q1: Whether to define extra test metric?   * Option 1 (Huawei): Yes * Option 2 (Apple, Intel, Ericsson): No   Q2: How to define extra test metric?  Further discuss in 2nd round  **Issue 5-1: Test applicability between HST-SFN and HST single tap/Issue 5-6: HST single tap requirements**  – Option 1 (DOCOMO, Intel): Skip the Rel-15 HST single tap test, if UE passes the requirements for HST-SFN  – Option 2 (Apple, Huawei, Ericsson, vivo, QC): Skip both Rel-15 and Rel-16 HST single tap test, if UE passes the requirements for HST-SFN  – Option 3 (DOCOMO): Skip both Rel-15 and Rel-16 HST single tap test except for Rel-16 FDD HST single-tap, if UE passes the requirements for HST-SFN  NTT DoCoMO: we prefer to align with LTE approach. We don’t test applicable rules among Rel-8 single tap and Rel-14 HST-SFN.  Intel: HST single tap has high Doppler shift.  QC: If needed, QC can comprise to option 3.  E///: we also have concern no test coverage on HST single tap and we are fine with option3.  ViVo: We are fine for comprise to option 3.  Agreement: Skip both Rel-15 and Rel-16 HST single tap test except for Rel-16 FDD HST single-tap, if UE passes the requirements for HST-SFN  **Recommended WF: Need further discussion**  **Whether to define a rule UE performs at least one of HST single tap tests?**  **Issue 5-2: Test applicability between HST-SFN and HST multi-path fading**  – Option 1 (Apple, QC): Do not test UE under HST multi-path scenarios, if UE passes the requirements for HST-SFN.  – Option 2 (DOCOMO, CMCC, Huawei, Ericsson): Do not define any applicability rules between HST-SFN and HST multi-path fading performance test cases  QC: Doppler spread under HST\_SFN much larger then HST multi-path scenario, that’s the logic we think test applicable rules can be applied.  Intel: Advanced receiver for HST-SFN ultized different CE algorithm to handle multi-path; multipath channel UE use different CE algorithm.  Agreement: Do not define any applicability rules between HST-SFN and HST multi-path fading performance test cases.  **Issue 5-3: Test applicability between different Doppler frequencies for the same channel model**  Agreement:   * + For FDD     - ***(Last meeting agreement)*** Define applicability rule for TDLB100-400       * Rel-15 multi-path fading with TDLB100-400 (Table 5.2.2.1.1-3 Test 1-1 and Table 5.2.3.1.1-3 Test 1-1) is not applicable for UE that passes Rel-16 multi-path fading tests TDLC300-600 for FDD     - Not define any applicability rule for TDLC300-100   + For TDD     - ***(Last meeting agreement)*** Not define any applicability rule for TDLB100-400 multi-path fading tests   Not define any applicability rule for TDLC300-100 multi-path fading tests  **Issue 5-4: Applicability rules between HST-SFN, and DPS schemes**  – Option 1 (Intel, ZTE, Apple, Qualcomm, vivo):  If UE passed HST-SFN requirements it does not need to be tested in HST-DPS.  – Option 2 (CMCC, Huawei, Ericsson, Intel):  Do not introduce applicability rule between DPS and HST-SFN requirements  **Recommended WF: Need further discussion**  CMCC: We see potential UE implementation difference among HST SFN and DPS, we are fine to comprise to define test applicable rules for DPS scheme and HST single Tap.  Huawei: Similar view as CMCC.  Intel: We fine with option 2 either.  E///: From deployment scenario could be same, but from receiver aspect we see different. We would see the whole package, if UE pass HST-SFN then almost all other test cases skipped.  DoCoMo: Similar view as E///.  QC: For DPS schemes 1a/1b and HST-SFN, Doppler shift under HST-SFN already cover DPS scheme 1a/1b.  Apple:  **Issue 5-4b: Applicability rules between HST-SFN, single tap and DPS schemes**  – Option 1 (Ericsson, Huawei)   * If UE passed HST-DPS 1a or 1b, both Rel-15/16 HST single tap test cases can be skipped.   – Option 2 (DOCOMO)   * If UE passed HST-DPS 1a or 1b, Rel-15 HST Single-tap test and Rel-16 HST Single-tap test except for Rel-16 FDD HST Single-tap test can be skipped.   Agreement: If UE passed HST-DPS 1a or 1b, Rel-15 HST Single-tap test and Rel-16 HST Single-tap test except for Rel-16 FDD HST Single-tap test can be skipped.  No test applicable rules among HST-SFN and HST DPS schemes 1b  FFS whether test applicable rules for HST-SFN, HST DPS scheme 1a needed or not  If a UE declared supporting > 1 TCI states, the UE will pass scheme 1b and skipped scheme 1a test cases  If a UE only support 1 TCI state, the UE need to pass scheme 1a and skip scheme 1b test cases |

##### 7.15.3.1 UE demodulation and CSI requirements [NR\_HST-Perf]

**R4-2017424 Email discussion summary for [97e][326] NR\_HST\_Demod\_UE**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

**Discussion:**

The contribution summarized email discussion thread [97e][326] NR\_HST\_Demod\_UE. The email thread was moderated by Xiaoran Zhang (China Mobile Com. Corporation) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017460**.

**R4-2017460 Email discussion summary for [97e][326] NR\_HST\_Demod\_UE**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

(Replaces R4-2017424)

**Discussion:**

The contribution summarized email discussion thread [97e][326] NR\_HST\_Demod\_UE. The email thread was moderated by Xiaoran Zhang (China Mobile Com. Corporation) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017624**.

**R4-2017624 Email discussion summary for [97e][326] NR\_HST\_Demod\_UE**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

(Replaces R4-2017460)

**Discussion:**

The contribution summarized email discussion thread [97e][326] NR\_HST\_Demod\_UE. The email thread was moderated by Xiaoran Zhang (China Mobile Com. Corporation) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

Session Chair Note: HST UE demod has been finalized.

**Decision:** The document was **noted**.

**R4-2017549 WF on NR HST UE demodulation**

*Type: other For: discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **approved**.

**R4-2014633 View on NR HST demod**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

**R4-2015602 Summary of ideal and impairment results for NR HST demodulation requirements**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **revised to R4-2017647**.

**R4-2017647 Summary of ideal and impairment results for NR HST demodulation requirements**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

(Replaces R4-2015602)

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

###### 7.15.3.1.1 Requirements for DPS transmission scheme(s) [NR\_HST-Perf]

**R4-2014216 Discussion on DPS transmission scheme in HST**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

**R4-2014553 Views on UE demodulation requirements for DPS transmission scheme for NR HST**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

**R4-2014563 CR to TS 38.101-4: Propagation conditions for HST scenarios**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0091 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Add Propagation conditions description for HST test cases

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked on the coversheet, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **revised to R4-2017539**.

**R4-2017539 CR to TS 38.101-4: Propagation conditions for HST scenarios**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0091 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2014563)

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **agreed**.

**R4-2014701 Further discussion on DPS for NR HST**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

**R4-2014704 Simulation results for DPS transmission scheme**

*Type: discussion For: Information  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

**R4-2015020 UE demodulation requirements for DPS transmission scheme**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

**R4-2015603 CR on HST DPS requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0097 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduce HST DPS requirements as per RAN4 agreements

**Discussion:**

The secretary commented that the CR number 0097 is missing on the coversheet. See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **revised to R4-2017540**.

**R4-2017540 CR on HST DPS requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0097 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015603)

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **agreed**.

**R4-2015604 Discussion on UE performance requirements for DPS transmission scheme**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

**R4-2015605 Simulation results on UE performance requirements for DPS 1a transmission scheme**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

**R4-2015812 PDSCH demodulation requirements for HST-DPS**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the PDSCH demodulation requirements with HST-DPS scenario.

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

###### 7.15.3.1.2 Requirements for HST-SFN [NR\_HST-Perf]

**R4-2014562 CR to TS 38.101-4: HST-SFN FDD performance requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0090 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Add Rel-16 DL HST-SFN FDD performacne requirements

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked on the coversheet, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **revised to R4-2017542**.

**R4-2017542 CR to TS 38.101-4: HST-SFN FDD performance requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0090 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2014562)

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **agreed**.

**R4-2014690 CR on HST-SFN requirements for TDD**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0092 Cat: B (Rel-16)  
  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **revised to R4-2017541**.

**R4-2017541 CR on HST-SFN requirements for TDD**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0092 rev 1 Cat: B (Rel-16)  
  
 Source: CMCC*

(Replaces R4-2014690)

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **agreed**.

**R4-2014696 CR on release independent for Rel.16 NR HST UE demodulation requirements**

*Type: CR For: Agreement  
 38.307 v15.6.0 CR-0034 Cat: B (Rel-15)  
  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **revised to R4-2017543**.

**R4-2017543 CR on release independent for Rel.16 NR HST UE demodulation requirements**

*Type: CR For: Agreement  
 38.307 v15.6.0 CR-0034 rev 1 Cat: B (Rel-15)  
  
 Source: CMCC*

(Replaces R4-2014696)

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **agreed**.

**R4-2014698 CR on release independent for Rel.16 NR HST UE demodulation requirements**

*Type: CR For: Agreement  
 38.307 v16.4.0 CR-0036 Cat: B (Rel-16)  
  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **revised to R4-2017544**.

**R4-2017544 CR on release independent for Rel.16 NR HST UE demodulation requirements**

*Type: CR For: Agreement  
 38.307 v16.4.0 CR-0036 rev 1 Cat: B (Rel-16)  
  
 Source: CMCC*

(Replaces R4-2014698)

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **agreed**.

**R4-2015813 Simulation results of PDSCH with HST-SFN**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This contribution provides the PDSCH simulation results with HST-SFN scenario.

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

###### 7.15.3.1.3 Requirements for HST single tap [NR\_HST-Perf]

**R4-2015606 CR on HST single-tap and HST multi-path fading requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0098 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduce minimum requirements for HST single-tap scenario and HST multi-path fading scenario as per RAN4 agreements

**Discussion:**

The secretary commented that the CR number 0098 is missing on the coversheet. See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **revised to R4-2017545**.

**R4-2017545 CR on HST single-tap and HST multi-path fading requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0098 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015606)

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **agreed**.

**R4-2016108 CR to TS38.101-4: Addition of Rel-16 HST FRCs**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0113 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Endorsed in RAN4#96-e R4-2011369

Introduction of Rel-16 HST TDD FRC without Special slot data. Addition of HST single Tap MCS17 FRC

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **revised to R4-2017546**.

**R4-2017546 CR to TS38.101-4: Addition of Rel-16 HST FRCs**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0113 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016108)

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **agreed**.

**R4-2016500 CR on FDD HST Single-Tap and Multipath Fading Requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0120 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Draft CR R4-2012673 was endorsed in last meeting with this change: FDD HST Single-Tap and Multipath Fading requirements are not defined.

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **revised to R4-2017547**.

**R4-2017547 CR on FDD HST Single-Tap and Multipath Fading Requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0120 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2016500)

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **revised to R4-2017682**.

**R4-2017682 CR on FDD HST Single-Tap and Multipath Fading Requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0120 rev 2 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2017547)

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **agreed**.

###### 7.15.3.1.4 Requirements for multi-path fading channels [NR\_HST-Perf]

###### 7.15.3.1.5 Applicability rule [NR\_HST-Perf]

**R4-2014217 Discussion on applicability rule for HST test**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

**R4-2014700 Discussion on applicability rule for UE demodulation requirements for NR HST**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

**R4-2015313 Views on HST applicability rules**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

**R4-2015607 CR on applicability rules for HST scenarios**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0099 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduce applicability rules for HST scenarios as per RAN4 agreements

**Discussion:**

The secretary commented that the CR number 0099 is missing on the coversheet. See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **revised to R4-2017548**.

**R4-2017548 CR on applicability rules for HST scenarios**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0099 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015607)

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **agreed**.

**R4-2015608 Discussion on applicability rules for different scenarios**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

**R4-2015814 Applicability rule for PDSCH demodulation requirements in HST WI**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the applicability rule for PDSCH demodulation requirements in HST WI.

**Discussion:**

See email discussion summary for [97e][326] NR\_HST\_Demod\_UE in R4-2017424.

**Decision:** The document was **noted**.

##### 7.15.3.2 BS demodulation requirements [NR\_HST-Perf]

**R4-2017425 Email discussion summary for [97e][327] NR\_HST\_Demod\_BS**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [97e][327] NR\_HST\_Demod\_BS. The email thread was moderated by Axel Mueller (Nokia Shanghai Bell) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017625**.

**R4-2017625 Email discussion summary for [97e][327] NR\_HST\_Demod\_BS**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2017425)

**Discussion:**

The contribution summarized email discussion thread [97e][327] NR\_HST\_Demod\_BS. The email thread was moderated by Axel Mueller (Nokia Shanghai Bell) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

Session Chair Note: BS demod part has been finalized. The remaining CRs can be handled in future in performance maintenance part.

**Decision:** The document was **noted**.

**R4-2017550 WF on Rel-16 NR HST BS demodulation requirements**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **revised to R4-2017676**.

**R4-2017676 WF on Rel-16 NR HST BS demodulation requirements**

*Type: other For: discussion  
 Source: Nokia*

(Replaces R4-2017550)

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **approved**.

**R4-2015183 Rel-16 NR HST BS demodulation requirements**

*Type: discussion For: Discussion  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2014397 Summary of ideal and impairment results for NR HST demodulation requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **revised to R4-2017557**.

**R4-2017557 Summary of ideal and impairment results for NR HST demodulation requirements**

*Type: discussion For: Discussion  
 Source: CATT*

(Replaces R4-2014397)

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

###### 7.15.3.2.1 PUSCH requirements [NR\_HST-Perf]

**R4-2014398 Simulation results for NR HST PUSCH demodulation requirement**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2014555 Simulation results for NR HST PUSCH**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2014822 CR for TS 38.141-1: Updates of NR PUSCH performance requirements for Multi-path fading channel models under high Doppler values and applicability rules.**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0153 Cat: B (Rel-16)  
  
 Source: NTT DOCOMO, INC.*

**Abstract:**

This CR updates performance requirements of PUSCH for Multi-path fading channel models under high Doppler values and applicability rules for PUSCH for HST.

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **revised to R4-2017551**.

**R4-2017551 CR for TS 38.141-1: Updates of NR PUSCH performance requirements for Multi-path fading channel models under high Doppler values and applicability rules.**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0153 rev 1 Cat: B (Rel-16)  
  
 Source: NTT DOCOMO, INC.*

(Replaces R4-2014822)

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **agreed**.

**R4-2015090 On NR Rel-16 HST BS demodulation PUSCH requirements and simulation results**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we have provided our views on various open PUSCH HST issues. In particular, simulation results misalignment and multi-path carrier frequency. Additionally, we have delivered the results of our simulation campaign on multi-path fading

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2015091 CR for 38.104: HST PUSCH demodulation requirements**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0242 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Agreement in RAN4#96-e to introduce multi-path fading channel requirements with high Doppler value in a separate table under section “8.2.4 Requirements for PUSCH for high speed train”.

Update of SNR requirements following simulation collection [R4-2012749].

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **revised to R4-2017552**.

**R4-2017552 CR for 38.104: HST PUSCH demodulation requirements**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0242 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015091)

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **agreed**.

**R4-2015118 Simulation results for NR HST PUSCH**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2015609 Simulation results on the NR HST PUSCH performance requirements**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2015846 Additional test cases and FRC tables for HST PUSCH**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0245 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Resubmission of endorsed Draft CR R4-2012681.

In RAN4#96-e, requirements for HST PUSCH under fading channel was agreed to be introduced in separate tables under the same section of AWGN channel requirements

**Discussion:**

The secretary commented that the CR number 0245 is missing on the coversheet. See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **revised to R4-2017553**.

**R4-2017553 Additional test cases and FRC tables for HST PUSCH**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0245 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015846)

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **agreed**.

**R4-2015850 simulation results for HST PUSCH under fading channel**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

simulation results for HST PUSCH under multipath fading channel

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

###### 7.15.3.2.2 PRACH requirements [NR\_HST-Perf]

**R4-2014399 Simulation results for NR HST PRACH demodulation requirement**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2014554 Simulation results for NR HST PRACH**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2015092 On NR Rel-16 HST BS demodulation PRACH simulation results**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we have provided our simulation results for HST PRACH restricted sets under fading propagation conditions.

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2015120 Simulation results for NR HST PRACH**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2015664 CR for 38.104: Introduction of performance requirements for NR HST PRACH under fading channel**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0250 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

RAN4 agree to introduce PRACH requirements of fading channel and the aligned requirements need to be added into the specfication

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **revised to R4-2017554**.

**R4-2017554 CR for 38.104: Introduction of performance requirements for NR HST PRACH under fading channel**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0250 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015664)

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **agreed**.

**R4-2015665 CR for 38.141-1: Introduction of conformance testing for NR HST PRACH under fading channel**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0251 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

RAN4 agree to introduce PRACH requirements of fading channel and the aligned requirements need to be added into the specfication

**Discussion:**

Withdrawn because Tdoc allocated for another specification. See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **withdrawn**.

**R4-2015666 CR for 38.141-2: Introduction of conformance testing for NR HST PRACH under fading channel**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0252 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

RAN4 agree to introduce PRACH requirements of fading channel and the aligned requirements need to be added into the specfication

**Discussion:**

Withdrawn because Tdoc allocated for another specification. See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **withdrawn**.

**R4-2015667 Simulation results for NR HST PRACH format 0 with restricted set A and B under fading channel**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2015849 simulation results for HST PRACH under fading channel**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

simulation results for TDLC300-400 for restricted set type A/B

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2016596 CR for 38.141-1 Introduction of conformance testing for NR HST PRACH under fading channel**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0166 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **revised to R4-2017555**.

**R4-2017555 CR for 38.141-1 Introduction of conformance testing for NR HST PRACH under fading channel**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0166 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016596)

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **agreed**.

**R4-2016597 CR for 38.141-2 Introduction of conformance testing for NR HST PRACH under fading channel**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0256 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **revised to R4-2017556**.

**R4-2017556 CR for 38.141-2 Introduction of conformance testing for NR HST PRACH under fading channel**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0256 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016597)

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **agreed**.

###### 7.15.3.2.3 UL timing adjustment requirements [NR\_HST-Perf]

**R4-2014400 Simulation results for NR PUSCH UL timing adjustment demodulation requirement**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2014426 Discussion on remaining issues of PUSCH UL TA**

*Type: discussion For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2014427 CR for 38.141-2: Introduction of NR PUSCH UL timing adjustment performance requirement for scenario X**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0228 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

Scenario X for UL timing adjustment has been agreed in RAN4#96e meeting in non-HST part as well as the additional CBWs.

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **revised to R4-2017558**.

**R4-2017558 CR for 38.141-2: Introduction of NR PUSCH UL timing adjustment performance requirement for scenario X**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0228 rev 1 Cat: F (Rel-16)  
  
 Source: CATT*

(Replaces R4-2014427)

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **agreed**.

**R4-2014702 Discussion on remaining issues for NR HST BS demodulation**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2014823 Views on NR PUSCH for UL timing adjustment**

*Type: other For: Approval  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2015093 On NR Rel-16 HST BS demodulation UL timing adjustment requirements and simulation results**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we have provided our views on various open UL TA HST issues. In particular, SCS/CBW combinations, and applicability rules for SCS/CBW combinations and implicit test passing.

Additionally, we have delivered the results of our simulatio

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2015119 Discussion and simulation results for NR HST UL timing adjustment**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2015121 CR on UL timing adjustment conducted performance requirement for TS 38.141-1**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0158 Cat: B (Rel-16)  
  
 Source: Samsung*

**Abstract:**

UL timing adjustment requirement have been introduced for NR HST in Rel-16. Additional scenario X for UL timing adjustment have been agreed to be introduced

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **revised to R4-2017559**.

**R4-2017559 CR on UL timing adjustment conducted performance requirement for TS 38.141-1**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0158 rev 1 Cat: B (Rel-16)  
  
 Source: Samsung*

(Replaces R4-2015121)

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **agreed**.

**R4-2015610 Discussion and simulation results on the UL timing adjustment**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2015847 discussion on HST UL TA remain issues**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

discuss test cases for scenario X and relative applicability rules

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2015848 additional simulation results for UL TA**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

simulation results for scenario X, Y and Z for UL TA

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

**R4-2016468 Simulation results for NR HST UL TA**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][327] NR\_HST\_Demod\_BS in R4-2017425.

**Decision:** The document was **noted**.

### 7.16 NR performance requirement enhancement [NR\_perf\_enh-Perf]

**R4-2017426 Email discussion summary for [97e][328] NR\_perf\_enh\_Demod**

*Type: other For: discussion  
 Source: Moderator (China Telecomm)*

**Discussion:**

The contribution summarized email discussion thread [97e][328] NR\_perf\_enh\_Demod. The email thread was moderated by Yang Shan (China Telecomunication Corp.) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017626**.

**R4-2017626 Email discussion summary for [97e][328] NR\_perf\_enh\_Demod**

*Type: other For: discussion  
 Source: Moderator (China Telecomm)*

(Replaces R4-2017426)

**Discussion:**

The contribution summarized email discussion thread [97e][328] NR\_perf\_enh\_Demod. The email thread was moderated by Yang Shan (China Telecomunication Corp.) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017560 Way forward on release independent aspect for UE demodulation and CSI reporting requirements**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **approved**.

**R4-2017561 Way forward on PDSCH CA normal demodulation requirements**

*Type: other For: discussion  
 Source: Intel*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **approved**.

**R4-2017562 Way forward on PMI reporting requirements for Tx ports larger than 8 and up to 32**

*Type: other For: discussion  
 Source: Ericsson, Samsung*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **revised to R4-2017681**.

**R4-2017681 Way forward on PMI reporting requirements for Tx ports larger than 8 and up to 32**

*Type: other For: discussion  
 Source: Ericsson, Samsung*

(Replaces R4-2017562)

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **approved**.

**R4-2017563 Simulation assumptions for NR PMI reporting requirements for more than 8 Tx ports**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **approved**.

**R4-2017570 Way forward on UE power imbalance requirements for FR1 CA and EN-DC**

*Type: other For: discussion  
 Source: NTT DoCoMo*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **approved**.

**R4-2017573 Way forward on CA CQI reporting requirements**

*Type: other For: discussion  
 Source: China Telecomm*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **approved**.

|  |
| --- |
| GTW session 11.5th  **Sub-topic 3-2: Type II PMI test setup**  **Sub-topic 3-3: SU-MIMO Type II PMI test parameters**  **Issue 3-3-1: subbandAmplitude for type II codebook construction**   * Option 2: True (Apple, Samsung, QC, Huawei compromise)   Agreement: TRUE  **Issue 3-3-2: PMI-FormatIndicator for type II codebook**   * Option 2: Subband (Apple, Samsung, QC, Huawei compromise)   Agreement: Subband  **Issue 3-3-4: Subband size for type II PMI**  *Tentative agreement:*   * Option 2: 8 for FDD and 16 for TDD (CTC, Samsung, Ericsson, QC, Apple compromise, Huawei)   Agreement: 8 for FDD and 16 for TDD  **Issue 3-3-5: Implementation of Random type II PMI**  Agreement:  Use the following as baseline and further the results from companies. Other proposals can be considered in the next meeting based on consensus.   * For beam randomization   + Option 2: Limit the set of possible beams to the possible beams under the configuration of following PMI, i.e., set L=2 for random PMI generation * Amplitude and phase coefficient randomization   + Option 2B: Set the same NPSK, subbandAmplitude with the configuration for follow PMI for random PMI generation.   **Sub-topic 4-1: UE power imbalance requirements for FR1 intra-band contiguous CA**   * Issue 4-1-1: MCS   + For 2Rx:     - Option 1: MCS 26 (Intel, HW, CTC, E///)     - Option 2: MCS 25 (QC)   + For 4Rx:     - Option 1: MCS 28, and discuss whether to skip the slots containing TRS in the test (Intel, HW, CTC)   QC: Using MCS28 with TRS containing slot, the coding rate > 0.95.  Huawei: We are also OK with option 2.  E///: We prefer option 2. To maintain the same MCS for all slots.   * + - Option 2: MCS 27 (E///, CTC, QC)   Agreement:   * 2Rx: MCS 26 * 4Rx: MCS 27   **Sub-topic 4-2: UE power imbalance requirements for intra-band contiguous and non-contiguous EN-DC**   * Issue 4-2-2: Single or aggregated carriers for LTE in the test   + Option 1: Consider the aggregated contiguous carriers for LTE if UE supports it (E///, CMCC, DCM, CTC, Intel)   + Option 2: Do not consider the aggregated contiguous carriers for LTE (HW)   CTC: With asymmetric CHBW size among NR and LTE carrier, in order to achieve similar BW for test, companies proposed option 1.  Huawei: We have concern on the test effort, test cost and test feasibility. For all the existing Demod test cases, only one LTE carrier configured. We are not sure whether NR carrier can be easily replaced by LTE carrier by TE.  E///: We agree we need to check with RAN5 experts. Meanwhile several operators prefer option1.  CMCC: In our understanding, we already have over than 5 CC for LTE test cases. It’s a valid scenario for deployment.  NTT DoCoMO: Similar as CMCC, we are considering the deployment scenarios which matched with option1.  CTC: Regarding number of faders on test, we think it’s achievable.  Huawei: Test cost is concern, we think with 1 carrier in LTE still serve test purpose.  **Issue 4-2-4: Channel bandwidth combination for testing**  Moderator recommended the following WF in the 1st round:   * Recommended WF **(**CTC, E///, CMCC, DCM**)**   + Firstly discuss issue 4-2-1 to issue 4-2-4 separately, and then come up the CBW selection solution based on the agreements on these 4 issues.   + For this issue 4-2-4, can we agree with the following option 4A updated based on option 4?   Option 4A:   * + - Step 1: First select the CBW combinations with the same BWs between LTE carrier(s) ~~(single carrier or aggregated contiguous carriers)~~ and NR carrier. If there is no such CBW combination, go to Step 1a~~, Step 1b and Step 1c~~. Otherwise go to step 2.       * Step 1a: Select the CBW combinations that the BW of NR carrier is smaller than the ~~(aggregated)~~ BW of LTE carrier(s). If there is no such CBW combination, go to Step 1c.       * Step 1b: Among the CBW combinations selected from Step 1a, select the CBW combinations with the smallest CBW difference between NR carrier and LTE carrier(s). Go to step 2.       * Step 1c: select the EN-DC combinations with smallest CBW difference between the NR carrier and LTE carrier(s). Go to step 2.     - Step 2: Among the CBW combinations selected from Step 1, select the EN-DC combination with the largest aggregated CBW * Issues raised for Option 4A:   + Limitation on frequency separation for non-contiguous EN-DC     - Option 1: set limitation (Intel)     - Option 2: If the frequency separation between two CCs is considered in this meeting, we prefer to test more than frequency separation ((CBWLTE + CBWNR) /2 + min (CBWLTE, CBWNR)) if this combination is only available test case. (DCM)     - Option 3: Limitation with Minimum value between CBW of LTE and CBW of NR. (CMCC)   E///: the value will be 0.   * + - Option 4: no limitation in RAN4 requirements, test set-up up to RAN5 (E///, NTT DoCoMo, CMCC, Huawei, SoftBank)     - Option 5: no limitation in RAN4 requirements and choose the scenario with smallest separation for test (Intel)   Intel: We have brought analysis for the reason to have limitation.  E///: This is same RF scenario, no limitation in RF core requirements and test cases set-up is up to RAN5 design. We should align with RF core requirements.  DoCoMO: We don’t want to have limitation on these test cases.  CMCC: The limitation on Frequency separation pending on LO location. We support no limitation, if companies have concern on LO location, we can further clarify to ensure LO located in the middle.  Intel: we don’t want to have limitation, just take a scenario with smallest separation for test.  Agreement: No limitation in RAN4 requirements, test set-up up to RAN5.  **Sub-topic 5-1: Duplex mode and SCS combinations for CA CQI**   * For the performance requirements:   + Option 1: Reuse the duplex mode and SCS combination of PDSCH normal CA requirements (CTC, CMCC)   CMCC: Our preference with option 1 with option A, we can comprise to option B with option 1.  E///: For CQI test cases is static CQI test cases and demod using fading channel; based our simulation result, we didn’t see the difference.  Huawei: we share similar as E///, we already comprised to option 3 considering operators’ demand.  CMCC: With option 1, there is no additional test effort compared to option 3.   * + Option 3: (Ericsson, CTC, HW, DCM)     - FR1: FDD + FDD with 15 kHz SCS, TDD + TDD with 30 kHz SCS, FDD 15 kHz +TDD 30kHz     - FR2: TDD + TDD with 120 kHz SCS * Test applicability rule for **option 1** of performance requirement definition:   + Option A: Test 3 cases for FR1 (CMCC)   + Option B: Test 2 cases for FR1 (CTC, CMCC)     - Candidate option for detailed applicability rule:       * Test #1: FDD 15 kHz + TDD 30 kHz > FDD 15 kHz + FDD 15 kHz > FDD 15 kHz + TDD 15 kHz       * Test #2: TDD 30 kHz + TDD 30 kHz > TDD 15 kHz + TDD 30 kHz * Test applicability rule for **option 3** of performance requirement definition:   + Option A: Test 2 cases for FR1 (HW)     - Test #1: FDD 15 kHz + TDD 30 kHz > FDD 15 kHz + FDD 15 kHz     - Test #2: TDD 30 kHz + TDD 30 kHz   Agreement:   * For the performance requirements:   + - FR1: FDD + FDD with 15 kHz SCS, TDD + TDD with 30 kHz SCS, FDD 15 kHz +TDD 30kHz     - FR2: TDD + TDD with 120 kHz SCS * Test applicability rule for performance requirement definition:   + Test 2 cases for FR1     - Test #1: FDD 15 kHz + TDD 30 kHz > FDD 15 kHz + FDD 15 kHz     - Test #2: TDD 30 kHz + TDD 30 kHz   **Sub-topic 2-1: Test of different CA capabilities for CA normal PDSCH**   * Option 3 (CTC, CMCC, HW, DCM, ZTE)   + Intra-band CA: test intra-band contiguous CA, and intra-band non-contiguous CA   + Inter-band CA: test inter-band CA with the largest number of bands and inter-band CA with the largest aggregated CBW     - If the selection of “inter-band CA with the largest number of bands” and “inter-band CA with the largest aggregated CBW” results in the same CA configuration(s), only one inter-band CA configuration will be tested; otherwise, two inter-band CA configurations will be tested. * Option 4 (Intel)   + Intra-band CA: test intra-band contiguous CA, and intra-band non-contiguous CA   + Inter-band CA: test one inter-band configuration, which will be selected during CA configuration(s) and CBW combination selection procedure.   Intel: We are still on discussion on CA and CBW selection; we need to check what the UE capability. With option 3, we may face the situation UE can’t be tested pending on UE capability.  Agreement:  Intra-band CA: test intra-band contiguous CA, and intra-band non-contiguous CA |

#### 7.16.1 UE demodulation and CSI requirements (38.101-4) [NR\_perf\_enh-Perf]

##### 7.16.1.1 NR CA PDSCH requirements [NR\_perf\_enh-Perf]

**R4-2014498 Test applicability for NR CA PDSCH normal demodulation requirements**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2014549 Discussion on NR CA UE demodulation requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2014550 Draft CR on FRC for Normal NR CA demodulation requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0088 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Definition of FRCs for Normal CA requirements

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **agreed**.

**R4-2014729 Introduction of NR PDSCH FR1 CA 2Rx performance requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0093 Cat: B (Rel-16)  
  
 Source: CMCC*

**Abstract:**

Revised Rel-16 NR performance requirements enhancement WI RP-200472 is approved in RAN#87-e meeting. NR CA PDSCH normal demodulation requirements for NR CA are agreed to be defined for the following CA configs:

FDD CA with 15kHz SCS

TDD CA

30kHz SCS + 30kHz SCS

15kHz SCS + 30kHz SCS

TDD FDD CA

FDD 15kHz SCS + TDD 15kHz SCS

FDD 15kHz SCS + TDD 30kHz SCS

DraftCR has been endorsed in RAN4 #96-e R4-2012693

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **revised to R4-2017567**.

**R4-2017567 Introduction of NR PDSCH FR1 CA 2Rx performance requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0093 rev 1 Cat: B (Rel-16)  
  
 Source: CMCC*

(Replaces R4-2014729)

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **agreed**.

**R4-2014730 Test applicability rule for NR CA PDSCH normal demodulation**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2015312 Views on test applicability rule for CA PDSCH requirements**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2015655 Discussion on PDSCH CA normal demodulation requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2015656 CR: Introduction of performance requirements for NR FR1 PDSCH CA with 4Rx**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0103 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Revised Rel-16 NR performance requirements enhancement WI RP-200472 is approved in RAN#87-e meeting. NR PDSCH normal demodulation requirements for NR CA were agreed to be defined for the following CA configs:

FDD CA with 15kHz SCS

TDD CA

30kHz SCS + 30kHz SCS

15kHz SCS + 30kHz SCS

TDD FDD CA

FDD 15kHz SCS + TDD 15kHz SCS

FDD 15kHz SCS + TDD 30kHz SCS

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **revised to R4-2017568**.

**R4-2017568 CR: Introduction of performance requirements for NR FR1 PDSCH CA with 4Rx**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0103 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015656)

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **agreed**.

**R4-2016003 CR on Applicability rules for Normal NR CA demodulation requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0108 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Definition of applicability rules for Normal CA requirements

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **revised to R4-2017566**.

**R4-2017566 CR on Applicability rules for Normal NR CA demodulation requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0108 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2016003)

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **agreed**.

**R4-2016512 CR on FR2 PDSCH CA Requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0122 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Draft CR R4-2012695 was endorsed in last meeting with this change: FR2 PDSCH CA requirements are not defined.

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **agreed**.

##### 7.16.1.2 PMI reporting requirements with larger number of Tx ports [NR\_perf\_enh-Perf]

**R4-2014252 On PMI reporting requirements with larger number of TX ports**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2014551 Discussion on PMI Type I requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2014672 On PMI reporting requirements for larger Tx ports**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2014746 Views and simulation results for Rel-15 Type II PMI test case**

*Type: discussion For: Approval  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2014748 Draft CR for introduction of Rel-15 Type II PMI test cases**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Samsung*

**Abstract:**

Introduce PMI tese case to verify UE reporting accuracy for Rel-15 Type II codebook

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **revised to R4-2017569**.

**R4-2017569 Draft CR for introduction of Rel-15 Type II PMI test cases**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: Samsung*

(Replaces R4-2014748)

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **endorsed**.

**R4-2015657 Simulaiton results for Type II codebook PMI reporting test**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2015658 Discussion on the open issue of PMI reporting test with larger Tx ports**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2015659 CR for TS 38.101-4: Applicability for NR PMI requirements with Tx ports larger than 8 and up to 32**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0104 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR introduces the applicability rule for Type II codebook of NR PMI requirements with Tx ports larger than 8 and up to 32

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **endorsed**.

**R4-2017660 CR to TS 38.101-4: on gamma values for SP Type I PMI requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0123 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **agreed**.

**R4-2016098 Summary of simulation results of NR UE CSI PMI with 16, and 32Tx antennas**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This paper provides a collection of SP Type I PMI requirements

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2016099 Simulation results for Rel-15 Type II codebook**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This paper provides our simulation results for Rel-15 Type II codebook

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2016100 Evaluations of Rel-15 Type II PMI testing**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper provides our views on Rel-15 Type II codebook PMI testing

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2016434 Parameters and simulation results on PMI reporting requirements with larger number of Tx ports**

*Type: discussion For: (not specified)  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

##### 7.16.1.3 FR1 CA and EN-DC power imbalance requirements [NR\_perf\_enh-Perf]

**R4-2014499 Power imbalance requirements for FR1 CA and EN-DC**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2015317 Views on FR1 power imbalance requirements**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2015318 CR: FR1 EN-DC power imbalance requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0094 Cat: B (Rel-16)  
  
 Source: NTT DOCOMO, INC, SoftBank Corp.*

**Abstract:**

Revised Rel-16 NR performance requirements enhancement WI RP-200472 is approved in RAN#87-e meeting. FR1 CA and EN-DC power imbalance requirements are agreed to be defined.

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **revised to R4-2017571**.

**R4-2017571 CR: FR1 EN-DC power imbalance requirements**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0094 rev 1 Cat: B (Rel-16)  
  
 Source: NTT DOCOMO, INC, SoftBank Corp.*

(Replaces R4-2015318)

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **agreed**.

**R4-2015660 Discussion on UE power imbalance requirements for FR1 CA and EN-DC**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2015661 CR: Addition of power imbalance requirements for intra-band contiguous CA and intra-band EN-DC**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0105 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

As per the revised Rel-16 NR performance requirements enhancement WID RP-200472 approved in RAN#87-e meeting, PDSCH demodulation performance requirements with power imbalance for FR1 intra-band contiguous 2CC CA and intra-band EN-DC are agreed to be defined.

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **revised to R4-2017572**.

**R4-2017572 CR: Addition of power imbalance requirements for intra-band contiguous CA and intra-band EN-DC**

*Type: CR For: Agreement  
 38.101-4 v16.2.0 CR-0105 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015661)

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **agreed**.

**R4-2015820 PDSCH demodulation requirements with power imbalanced condition**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses PDSCH demodulation requirements with power imbalanced condition.

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2016463 Views on Power Imbalance Tests**

*Type: discussion For: (not specified)  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

##### 7.16.1.4 NR CA CQI reporting requirements [NR\_perf\_enh-Perf]

**R4-2014500 Duplex mode and SCS for CA CQI test**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2014552 Discussion on FR1 CA and EN-DC power imbalance requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2014673 DraftCR: Adding applicability and requirements for FR1 and FR2 CA CQI reporting test**

*Type: draftCR For: Endorsement  
 38.101-4 v16.2.0  
 Source: China Telecom*

**Abstract:**

Introducing CA CQI reporting requirements for NR CA under AWGN condition is one of the objective of the Rel-16 NR performance requirements enhancement WI. In the RAN4 #96e meeting, the test metric and most of the test parameters have been decided in R4-2012692.

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **endorsed**.

**R4-2014728 Discussion on FR1 CA and EN-DC power imbalance requirements**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2015662 Discussion on CA CQI reporting requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2015821 CA CQI reporting requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the remaining open issues on CA CQI reporting requirements.

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

##### 7.16.1.5 Release independent [NR\_perf\_enh-Perf]

**R4-2014253 On Release Independence for NR UE performance enhancement requirements**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2014501 Draft CR for TS 38.307 on UE demodulation performance requirements (Rel-15)**

*Type: draftCR For: Endorsement  
 38.307 v15.6.0  
 Source: China Telecom*

**Abstract:**

For Rel-16 NR\_perf\_enh-Perf WI, the following agreements were reached in RAN4#94e in R4-2002390.

CA normal demodulation requirements

The requirements for those CA configurations that are defined as release independent from release 15 in TS 38.307 can be release independent from release 15

PMI reporting requirements for single panel Type I codebook

The requirements for 16 and 32 Tx ports can be release independent from release 15

Demodulation requirements for TDD LTE - NR coexistence

Release independent from release 15 for the TDD bands supporting spectrum sharing in Rel-15

The features/requirements in the last two bullets are not included in Rel-15 of 38.307.

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **revised to R4-2017564**.

**R4-2017564 Draft CR for TS 38.307 on UE demodulation performance requirements (Rel-15)**

*Type: draftCR For: Endorsement  
 38.307 v15.6.0  
 Source: China Telecom*

(Replaces R4-2014501)

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **endorsed**.

**R4-2014502 Draft CR for TS 38.307 on UE demodulation performance requirements (Rel-16)**

*Type: draftCR For: Endorsement  
 38.307 v16.4.0  
 Source: China Telecom*

**Abstract:**

For Rel-16 NR\_perf\_enh-Perf WI, the following agreements were reached in RAN4#94e in R4-2002390. This CR is to capture these RAN4 agreements into the specification.

CA normal demodulation requirements

The requirements for those CA configurations that are defined as release independent from release 15 in TS 38.307 can be release independent from release 15

PMI reporting requirements for single panel Type I codebook

The requirements for 16 and 32 Tx ports can be release independent from release 15

Demodulation requirements for TDD LTE - NR coexistence

Release independent from release 15 for the TDD bands supporting spectrum sharing in Rel-15

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **revised to R4-2017565**.

**R4-2017565 Draft CR for TS 38.307 on UE demodulation performance requirements (Rel-16)**

*Type: draftCR For: Endorsement  
 38.307 v16.4.0  
 Source: China Telecom*

(Replaces R4-2014502)

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **endorsed**.

**R4-2015316 Views on release independence aspect for power imbalance requirements**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2015663 Discussion on release independence for NR performance requirements enhancements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

**R4-2015822 Release independent requirements for Rel-16 performance requirement enhancement**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the release independent requirements discussed in Rel-16 UE performance enhancement WI.

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **noted**.

#### 7.16.2 BS demodulation requirements (38.104) [NR\_perf\_enh-Perf]

**R4-2015845 Adding FRC table description in Annex in TS38.104 v16.5.0**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0257 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

There is a FRC table description missing.

**Discussion:**

The secretary commented that the CR number 0257 is missing on the coversheet. See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **revised to R4-2017574**.

**R4-2017574 Adding FRC table description in Annex in TS38.104 v16.5.0**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0257 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2015845)

**Discussion:**

See email discussion summary for [97e][328] NR\_perf\_enh\_Demod in R4-2017426.

**Decision:** The document was **agreed**.

### 7.17 Over the air (OTA) base station (BS) testing TR [OTA\_BS\_testing-Perf]

#### 7.17.1 General [OTA\_BS\_testing-Perf]

**R4-2017409 Email discussion summary for [97e][311] OTA\_BS\_Testing**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][311] OTA\_BS\_Testing. The email thread was moderated by Michal Szydelko (Huawei Technologies Sweden AB) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017627**.

**R4-2017627 Email discussion summary for [97e][311] OTA\_BS\_Testing**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2017409)

**Discussion:**

The contribution summarized email discussion thread [97e][311] OTA\_BS\_Testing. The email thread was moderated by Michal Szydelko (Huawei Technologies Sweden AB) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2015960 CR to TR 37.941: overall TR cleanup, Rel-15**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0013 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

Cleanup corrections of the whole TR 37.941.

Full TR is attached to this cover page.

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **revised to R4-2017575**.

**R4-2017575 CR to TR 37.941: overall TR cleanup, Rel-15**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0013 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2015960)

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **revised to R4-2017683**.

**R4-2017683 CR to TR 37.941: overall TR cleanup, Rel-15**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0013 rev 2 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2017575)

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

Session Chair Note: revision for e-mail approval (final review as WI closes; the only allowed corrections in this revision: cross-reference corrections, editorials)

**Decision:** The document was **agreed**.

**R4-2015961 CR to TR 37.941: overall TR cleanup, Rel-16**

*Type: CR For: Agreement  
 37.941 v16.1.0 CR-0014 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Cleanup corrections of the whole TR 37.941, Rel-16.

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **agreed**.

#### 7.17.2 MU / TT values: derivation and tables [OTA\_BS\_testing-Perf]

**R4-2015714 CR to TR 37.941: Removal of Square Brackets**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0011 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

[ ] cannot be be in the final version TR

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **not pursued**.

**R4-2015715 CR to TR 37.941: Removal of Square Brackets**

*Type: CR For: Agreement  
 37.941 v16.1.0 CR-0012 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Removal of [ ] in MU tables in TR 37.941

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **withdrawn**.

**R4-2015962 CR to TR 37.941: MU and TT values alignments and corrections, Rel-15**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0015 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

It was observed that there were some inconsistencies across the MU and TT values in requirements specific sections and in the summary tables in cluase 17 and 18.

Regulatory decision is incorporated for the TT of the OTA RX spur requirement.

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **revised to R4-2017579**.

**R4-2017579 CR to TR 37.941: MU and TT values alignments and corrections, Rel-15**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0015 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2015962)

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **agreed**.

**R4-2015963 CR to TR 37.941: MU and TT values alignments and corrections, Rel-16**

*Type: CR For: Agreement  
 37.941 v16.1.0 CR-0016 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

MU and TT values inconsistencies are corrected among requirement specific sections and the summary tables, together with other text improvements. Regulatory decision is incorporated for the TT of the OTA RX spur requirement.

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **agreed**.

**R4-2016370 Plane Wave Synthesizer**

*Type: discussion For: (not specified)  
 37.941 v..  
 Source: ROHDE & SCHWARZ*

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **noted**.

**R4-2016466 CR to TR 37.941: Completion of MU terms for PWS.**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0023 Cat: F (Rel-15)  
  
 Source: ROHDE & SCHWARZ*

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **revised to R4-2017577**.

**R4-2017577 CR to TR 37.941: Completion of MU terms for PWS.**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0023 rev 1 Cat: F (Rel-15)  
  
 Source: ROHDE & SCHWARZ*

(Replaces R4-2016466)

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **agreed**.

**R4-2016467 Mirror CR to TR 37.941: Completion of MU terms for PWS.**

*Type: CR For: Agreement  
 37.941 v16.1.0 CR-0024 Cat: A (Rel-16)  
  
 Source: ROHDE & SCHWARZ*

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **agreed**.

#### 7.17.3 Annexes [OTA\_BS\_testing-Perf]

**R4-2015964 CR to TR 37.941: alignments and corrections to the MU contributors and MU derivations, Rel-15**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0017 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

MU contributor terms alignment among MU tables and annexes is provided. Related Excel spreadsheets to be further updated to reflect modifications in the TR.

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **revised to R4-2017578**.

**R4-2017578 CR to TR 37.941: alignments and corrections to the MU contributors and MU derivations, Rel-15**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0017 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2015964)

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **revised to R4-2017684**.

**R4-2017684 CR to TR 37.941: alignments and corrections to the MU contributors and MU derivations, Rel-15**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0017 rev 2 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2017578)

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

Session Chair Note: revision for e-mail approval (need to align MU Excel spreadsheets with the modifications in MS Word; no MU values to be changed)

The contribution was subject for agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015965 CR to TR 37.941: alignments and corrections to the MU contributors and MU derivations, Rel-16**

*Type: CR For: Agreement  
 37.941 v16.1.0 CR-0018 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

MU contributor terms alignment among MU tables and annexes is provided. Related Excel spreadsheets to be further updated to reflect modifications in the TR.

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **agreed**.

#### 7.17.4 Others [OTA\_BS\_testing-Perf]

**R4-2016290 CR to TR 37.941: Corrections to TRP measurement procedures**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0019 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Cross-references are incorrect in a few procedures in clause 6.3.2.2.

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **revised to R4-2017576**.

**R4-2017576 CR to TR 37.941: Corrections to TRP measurement procedures**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0019 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016290)

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **agreed**.

**R4-2016291 CR to TR 37.941: Corrections to TRP measurement procedures**

*Type: CR For: Agreement  
 37.941 v16.1.0 CR-0020 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Cross-references are incorrect in a few procedures in clause 6.3.2.2.

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **agreed**.

**R4-2016292 Justification for additional test cases for PWS**

*Type: discussion For: (not specified)  
 37.941 v..  
 Source: ROHDE & SCHWARZ*

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **noted**.

**R4-2016293 CR to TR 37.941: Additional test cases for PWS**

*Type: CR For: Agreement  
 37.941 v15.1.0 CR-0021 Cat: F (Rel-15)  
  
 Source: ROHDE & SCHWARZ*

**Abstract:**

PWS method is able to cover additional test cases for BS OTA conformance

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **agreed**.

**R4-2016300 Mirror CR to TR 37.941: Additional test cases for PWS**

*Type: CR For: Agreement  
 37.941 v16.1.0 CR-0022 Cat: A (Rel-16)  
  
 Source: ROHDE & SCHWARZ*

**Discussion:**

See email discussion summary for [97e][311] OTA\_BS\_Testing in R4-2017409.

**Decision:** The document was **agreed**.

### 7.18 2-step RACH for NR [NR\_2step\_RACH-Perf]

#### 7.18.1 RRM core requirements maintenance (38.133) [NR\_2step\_RACH-Core]

**R4-2017023 Email discussion summary for [97e][224] NR\_2step\_RACH\_RRM**

*Type: other For: discussion  
 Source: Moderator (ZTE Corporation)*

**Discussion:**

The contribution summarized email discussion thread [97e][224] NR\_2step\_RACH\_RRM. The email thread was moderated by Richie Leo (ZTE) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017294**.

**R4-2017294 Email discussion summary for [97e][224] NR\_2step\_RACH\_RRM**

*Type: other For: discussion  
 Source: Moderator (ZTE Corporation)*

(Replaces R4-2017023)

**Discussion:**

The contribution summarized email discussion thread [97e][224] NR\_2step\_RACH\_RRM. The email thread was moderated by Richie Leo (ZTE) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

**R4-2014935 CR Maintenance 2-step RACH RRM requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1214 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Correction to RRM core requirements related to 2-step RACH procedure, which involves MsgB and not RAR.

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **revised to R4-2017255**.

**R4-2017255 CR Maintenance 2-step RACH RRM requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1214 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2014935)

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **agreed**.

#### 7.18.2 RRM perf. requirements (38.133) [NR\_2step\_RACH-Perf]

**R4-2017254 WF on 2-step RACH RRM test cases**

*Type: other For: discussion  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **approved**.

##### 7.18.2.1 General [NR\_2step\_RACH-Perf]

**R4-2014933 Big CR on 2-step RA type RRM performance requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1213 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Addition of 2-step RACH tests for 2-step RACH.

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **revised to R4-2017253**.

**R4-2017253 Big CR on 2-step RA type RRM performance requirements**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1213 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2014933)

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2014356 Principles for 2-step RACH test cases**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **noted**.

**R4-2014934 2-step RACH RRM performance requirements**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **noted**.

**R4-2015810 Draft CR: RMC of MsgA for 2-step RACH test**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Ericsson*

**Abstract:**

RMC of MsgA for 2-step RACH test is missing

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **revised to R4-2017259**.

**R4-2017259 Draft CR: RMC of MsgA for 2-step RACH test**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Ericsson*

(Replaces R4-2015810)

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **endorsed**.

##### 7.18.2.2 Test cases [NR\_2step\_RACH-Perf]

**R4-2014008 [draft CR] 2-step RACH test case**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: ZTE Corporation*

**Abstract:**

Add test cases corresponding to core requirements for 2 step RA, in specific, for FR1 NR cells in NR SA under Non-contention based RA and FR2 NR cells in EN-DC under Non-contention based RA. Correct the titles in the current test cases for 4-step RA.

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **revised to R4-2017256**.

**R4-2017256 [draft CR] 2-step RACH test case**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: ZTE Corporation*

(Replaces R4-2014008)

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **endorsed**.

**R4-2014936 Draft CR on 2-step RA type CBRA in FR2 for NR Standalone**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction of text clause with RRM performance requirements of contention-based 2-step RACH in FR2 in standalone

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **revised to R4-2017257**.

**R4-2017257 Draft CR on 2-step RA type CBRA in FR2 for NR Standalone**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2014936)

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **endorsed**.

**R4-2015303 Draft CR on TC for 2-step RA type contention based RA in FR1 and FR2 NR cells for EN-DC**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: NEC*

**Abstract:**

Addition of 2-step RA type test cases for contention based RA in EN-DC

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **revised to R4-2017258**.

**R4-2017258 Draft CR on TC for 2-step RA type contention based RA in FR1 and FR2 NR cells for EN-DC**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: NEC*

(Replaces R4-2015303)

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **endorsed**.

**R4-2015811 Draft CR: Introduction of 2-step RACH CFRA tests**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Ericsson*

**Abstract:**

Introduction of non-contention based random access test for 2-step RA type

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **revised to R4-2017260**.

**R4-2017260 Draft CR: Introduction of 2-step RACH CFRA tests**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Ericsson*

(Replaces R4-2015811)

**Discussion:**

See email discussion summary for [97e][224] NR\_2step\_RACH\_RRM in R4-2017023.

**Decision:** The document was **endorsed**.

#### 7.18.3 BS Demodulation requirements (38.104) [NR\_2step\_RACH-Perf]

**R4-2017427 Email discussion summary for [97e][329] NR\_2step\_RACH\_Demod**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

**Discussion:**

The contribution summarized email discussion thread [97e][329] NR\_2step\_RACH\_Demod. The email thread was moderated by Aijun Cao (ZTE Wistron Telecom AB) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017628**.

**R4-2017628 Email discussion summary for [97e][329] NR\_2step\_RACH\_Demod**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

(Replaces R4-2017427)

**Discussion:**

The contribution summarized email discussion thread [97e][329] NR\_2step\_RACH\_Demod. The email thread was moderated by Aijun Cao (ZTE Wistron Telecom AB) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

|  |
| --- |
| **GTW session on 11.9th**  **Issue 1-1-1: Whether or not to define BS demodulation performance requirements for 2-step RACH with both DMRS configurations (1+1, 1+1+1) for FR1:**   * Proposals   + Option 1: No, only for one DMRS configuration   + Option 2: Yes, define requirements for both 2 and 3 DMRS symbols   **Issue 1-1-2: If answer to Issue 1-1-1 is Option 1, specify BS demodulation performance requirements for 2-step RACH with the following DMRS configuration for FR1:**   * Proposals   + Option 1: 1+1+1   + Option 2: 1+1   Agreement: for Issue 1-1-1 and 1-1-2 on DMRS configuration for FR1   * Define only one set of requirements for FR1 * Since the performance difference between two DMRS configuration is negligible, the same requirements would apply to both * When deriving performance requirements, simulation results with both DMRS configurations are treated together * In the tests, DMRS can be configured to 1+1 or 1+1+1 according to vendor’s declaration under the same core requirements   Huawei: fine with the recommendation, separate FRC maybe needed.  Samsung: Same comment as Huawei.  Nokia: We are fine with the comprise. We need to use CR to define the applicable rules.  ZTE: The basis with the comprise, the performance requirements will be same. We will have separate FRC tables in Annex, and have same table refer to both FRCs for introducing requirements.  E///: We are fine the comprise. One FRC with two alternative or separate FRC tables. We need to ensure this is single requirements.  **Issue 1-2-1: Regarding TO cycling level, BS demodulation requirements for 2-step RACH are specified with:**   * Proposals   + Option 1: only medium level TO cycling   + Option 2: both medium and high level TO cycling   + Option 3: both medium and high level TO cycling, but high level TO cycling is only for FR1   + Option 4: only high level TO cycling with revised TO values * Recommended WF   + *Compromise to Option 4: Only define performance requirements for high level TO cycling but with revised TO values*   **Issue 1-2-2: If answer to Issue 1-2-1 is either Option 2, 3 or 4, should TO values for high level TO cycling be revised?**   * Proposals   + Option 1: No, keep the current values   + Option 2: Yes, change to other values, e.g., 2.3us for the 30k SCS and 0.55us for the 120kHz SCS * Recommended WF:*Revise TO values for high TO cycling as following*   + *15 kHz: [0 : 0.1 : 3.8]*   + *30 kHz: [0 : 0.1 : 2]*   + *60 kHz: [0 : 0.1 : 0.6]*   + *120 kHz: [0 : 0.1 : 0.5]*   Agreement: Only define performance requirements for high level TO cycling but with revised TO values as following:   * + 15 kHz: [0 : 0.2 : 3.8]   + 30 kHz: [0 : 0.1 : 2]   + 60 kHz: [0 : 0.1 : 0.6]   + 120 kHz: [0 : 0.1 : 0.5]   Nokia: In the CR, we don’t mention the high level or medium level since only one set introduced.  Samsung: The step for time of offset, can we consider to increase step size considering test effort.  E///: We don’t think this impact test time too much.  Nokia: What are the values Samsung proposed?  Intel: Fine to change step size which bring benefits on test time reduction.  ZTE: We agree the points not balance among FR1 and FR2. The step-size no impact on performance.  **Issue 1-3: Set test metric for BS demodulation performance requirements for 2-step RACH as:**   * Proposals   + Option 1: BLER 0.01   + Option 2: BLER 0.1 * Recommended WF   + *Majority view to keep the current baseline as BLER = 0.01*   Agreement: BLER 0.01 |

**R4-2017580 Way forward on BS performance requirements for 2-step RACH**

*Type: other For: discussion  
 Source: ZTE*

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **approved**.

**R4-2014560 Views on BS demodulation requirements for NR 2-Step RACH**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **noted**.

**R4-2014561 CR to TS 38.141-2: BS demodulation requirements for 2-step RACH (Annex)**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0231 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Add Rel-16 2-step RACH demodulation performacne requirements

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked on the coversheet, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **revised to R4-2017633**.

**R4-2017633 CR to TS 38.141-2: BS demodulation requirements for 2-step RACH (Annex)**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0231 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2014561)

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **agreed**.

**R4-2014937 2-step RACH BS demodulation performance requirements**

*Type: discussion For: Agreement  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on remaining topics for 2-step RACH BS demodulation

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **noted**.

**R4-2014938 2-step RACH BS demodulation simulation results**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **noted**.

**R4-2014939 Introduction of 2-step RACH FRC tables in 38.141-1**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0154 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction of FRCs in 38.141-1 related to 2-step RACH demodulation performance requirements

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **revised to R4-2017637**.

**R4-2017637 Introduction of 2-step RACH FRC tables in 38.141-1**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0154 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2014939)

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **agreed**.

**R4-2015022 Introduction of test procedure and requirement for 2-step RACH**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0233 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

2-step RACH test procedure and requirements should be introduced to the conformance specifications

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **not pursued**.

**R4-2017638 Introduction of test procedure and requirement for 2-step RACH**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0233 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **withdrawn**.

**R4-2017654 CR to 38.141-1 Introduction of test procedure and requirements for 2-step RACH**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0167 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **revised to R4-2017667**.

**R4-2017667 CR to 38.141-1 Introduction of test procedure and requirements for 2-step RACH**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0167 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2017654)

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **agreed**.

**R4-2015125 Discussion and simulation results for BS 2-step RACH requirement**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **noted**.

**R4-2015126 Draft CR on MsgA PUSCH radiated performance requirement for TS 38.141-2**

*Type: draftCR For: Endorsement  
 38.141-2 v16.5.0  
 Source: Samsung*

**Abstract:**

MsgA PUSCH requirements have been introduced for Rel-16 NR 2-step RACH

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **not pursued**.

**R4-2017634 Draft CR on MsgA PUSCH radiated performance requirement for TS 38.141-2**

*Type: draftCR For: Endorsement  
 38.141-2 v16.5.0  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **withdrawn**.

**R4-2017653 CR on MsgA PUSCH radiated performance requirement for TS 38.141-2**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0258 Cat: B (Rel-16)  
  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **agreed**.

**R4-2015177 Draft CR to TS 38.104 BS demodulation requirements for 2-step RACH**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0245 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

BS demodulation requirements for 2-step RACH are missing in TS 38.104

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **not pursued**.

**R4-2017635 CR to TS 38.104 BS demodulation requirements for 2-step RACH**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0245 rev 1 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

(Replaces R4-2015177)

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **revised to R4-2017666**.

**R4-2017666 CR to TS 38.104 BS demodulation requirements for 2-step RACH**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0245 rev 2 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

(Replaces R4-2017635)

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **agreed**.

**R4-2015178 Simulation results on BS demodulation requirements for 2-step RACH**

*Type: discussion For: Information  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **noted**.

**R4-2015179 Simulation results collection on BS demodulation requirements for 2-step RACH**

*Type: discussion For: Information  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **noted**.

**R4-2015180 Open issues on BS demodulation requirements for 2-step RACH**

*Type: discussion For: Discussion  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **noted**.

**R4-2015611 Discussion and simulation results on NR 2-step RACH BS performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **noted**.

**R4-2015612 CR on BS demodulation requirements for 2-step RACH for FR2**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0248 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduce BS demodulation requirements for 2-step RACH for FR2 as per RAN4 agreements

**Discussion:**

The secretary commented that the CR number 0248 is missing on the coversheet. See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **revised to R4-2017636**.

**R4-2017636 CR on BS demodulation requirements for 2-step RACH for FR2**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0248 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015612)

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **agreed**.

**R4-2015857 2-step RACH open issues**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Proposals for the remainin open issues with 2-step RACH

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **noted**.

**R4-2015858 2-step RACH simulation results**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

Simulation results according to agreed assumptions

**Discussion:**

See email discussion summary for [97e][329] NR\_2step\_RACH\_Demod in R4-2017427.

**Decision:** The document was **noted**.

#### 7.18.4 Others [NR\_2step\_RACH-Perf]

### 7.19 R16 NR maintenance [WI code or TEI16]

#### 7.19.1 UE transient period capability [TEI16]

**R4-2016616 Email discussion summary for [97e][114] NR\_transient\_period**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

**Discussion:**

The contribution summarized email discussion thread [97e][114] NR\_transient\_period. The subject for discussion was R16 NR UE transient period. The email thread was moderated by Zhe Shao (China Mobile Group Device Co.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016958**.

**R4-2016958 Email discussion summary for [97e][114] NR\_transient\_period**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

(Replaces R4-2016616)

**Discussion:**

The contribution summarized email discussion thread [97e][114] NR\_transient\_period. The subject for discussion was R16 NR UE transient period. The email thread was moderated by Zhe Shao (China Mobile Group Device Co.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2014489 Short Transient Period Testing**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][114] NR\_transient\_period in R4-2016616.

**Decision:** The document was **noted**.

**R4-2014490 Draft CR on introduction of shorter Transient Period Capability**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0505 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated, Verizon, Dish Network, Ericsson, CMCC, Keysight Technologies, Nokia, Nokia Shanghai Bell, AT&T, ZTE, Vodafone, Orange, T-Mobile USA, Deutsche Telekom, Telecom Italia, CHTTL, China Telecom, SGS Wireless, Interdigital*

**Abstract:**

Adding the newly defined shorter transient periods.

**Discussion:**

The secretary commented that TS should be removed from the specification number, i.e. TS38.101-1 -> 38.101-1, and CR number should be zero padded, i.e. 505 -> 0505.

Chair: The symmetric placement of TP is the baseline assumption. At the same time, Huawei is encouraged to bring more analysis to show the gain of asymmetric placement. This issue will be closed at the next meeting.

See email discussion summary for [97e][114] NR\_transient\_period in R4-2016616.

**Decision:** The document was **postponed**.

**R4-2016516 On transient period UE capability**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][114] NR\_transient\_period in R4-2016616.

**Decision:** The document was **noted**.

**R4-2016517 CR on TS 38.101-1 time mask for shorter transient**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0575 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduce tpstart as the start line of shorter transient, the reason is provided in R4-2016516.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][114] NR\_transient\_period in R4-2016616.

**Decision:** The document was **revised to R4-2016829**.

**R4-2016829 CR on TS 38.101-1 time mask for shorter transient**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0575 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016517)

**Discussion:**

See email discussion summary for [97e][114] NR\_transient\_period in R4-2016616.

**Decision:** The document was **not pursued**.

#### 7.19.2 Transmit diversity and power class related to UL MIMO [TEI16]

**R4-2016617 Email discussion summary for [97e][115] NR\_TxD**

*Type: other For: discussion  
 Source: Moderator (vivo)*

**Discussion:**

The contribution summarized email discussion thread [97e][115] NR\_TxD. The subject for discussion was R16 NR support transmit diversity. The email thread was moderated by Sanjun Feng (vivo Mobile Communication) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016959**.

**R4-2016959 Email discussion summary for [97e][115] NR\_TxD**

*Type: other For: discussion  
 Source: Moderator (vivo)*

(Replaces R4-2016617)

**Discussion:**

The contribution summarized email discussion thread [97e][115] NR\_TxD. The subject for discussion was R16 NR support transmit diversity. The email thread was moderated by Sanjun Feng (vivo Mobile Communication) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016830 WF on NR TxD**

*Type: other For: discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **approved**.

##### 7.19.2.1 R16 support of transmit diversity [TEI16]

**R4-2014303 Remaining issues on Tx diversity**

*Type: other For: Approval  
 Source: LG Electronics Polska*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2014583 Remaining Issues on Transparent TxD**

*Type: discussion For: Approval  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2014686 Remaining items on transparent Tx diversity**

*Type: discussion For: Approval  
 Source: Anritsu corporation*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2014712 Tx diversity changes for Rel-16**

*Type: discussion For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2014713 Introduction of Tx diversity in tor 38101-1**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0510 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Introduction of TX diversity requirements

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **not pursued**.

**R4-2014849 Further discussio on the Support of Transparent Tx Diversity in Rel-16**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2014904 On Tx diversity**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2015265 Discussion on Tx diversity open issues**

*Type: other For: Approval  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2015321 Remaining issues in Transparent Tx Diversity**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2015340 Discussion on Rel-16 TxD**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2015341 CR on TxD requirements**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0537 Cat: F (Rel-16)  
  
 Source: OPPO*

**Abstract:**

It is agreed that transparent Tx diversity (TxD) is enabled at least from Rel-16 RAN4 specification.

And TxD is one kind of UE implementaion for single antenna port.

Necessary changes to single antenna port requirements are needed to make this kind of UE implementation be accormmodated.

**Discussion:**

The secretary wondered what is the correct Category? It reads B on the coversheet but the CR is allocated for F. See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **not pursued**.

**R4-2015342 Reply LS on Tx diversity testing**

*Type: LS out For: Approval  
 to RAN5  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2016034 Discussion on remaining open issues for Tx diversity requirements**

*Type: discussion For: Approval  
 Source: Rohde & Schwarz*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2016285 On the EVM Definition for Transmit Diversity**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Motorola Mobility France S.A.S*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **withdrawn**.

**R4-2016288 On the EVM Definition for Transmit Diversity**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Lenovo, Motorola Mobility*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2016477 On Tx diversity requirements**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2016478 CR for TS 38.101-1 Tx diversity requirements**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0567 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Make necessary changes to eliminate the ambiguity for supporting transparent Tx diversity.

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **not pursued**.

##### 7.19.2.2 Power class related to UL MIMO and other related req. (MPR, SEM, etc) [TEI16 or NR\_newRAT-Core]

**R4-2015322 Remaining issues in Power class**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2015976 PHR and Pcmax verification for NR PC2 devices supporting NR PC3 for EN-DC**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this contribution we consider verification of PHR and Pcmax for UL-MIMO PC2 and alignment with Rel-16 power-class verification

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2015977 Correction of Pcmax for an NR PC2 UE supporting NR PC3 for EN-DC**

*Type: CR For: Agreement  
 38.101-3 v15.11.0 CR-0403 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

For a UE advertising NR PC2 for SA but only supporting NR PC3 when configured with EN-DC, the Pcmax for NR should by modified according to the declared (for conformance) NR power capability for NSA so that the PHR becomes correct.

**Discussion:**

The secretary commented that the CR number should be zero padded, i.e. 403 -> 0403. See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **not pursued**.

**R4-2016465 Discussion on Single Carrier MPR versus Architecture**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

We provide here our input on how to distinguish the different MPRs vs power class and transmit chain architecture and still limit the amount of tables.

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

**R4-2016479 Discussion and draft reply LS on EN-DC power class**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][115] NR\_TxD in R4-2016617.

**Decision:** The document was **noted**.

#### 7.19.3 Other UE RF [WI code or TEI16]

**R4-2016618 Email discussion summary for [97e][116] NR\_R16\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (OPPO)*

**Discussion:**

The contribution summarized email discussion thread [97e][116] NR\_R16\_Maintenance. The email thread was moderated by Jinqiang Xing (OnePlus) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016960**.

**R4-2016960 Email discussion summary for [97e][116] NR\_R16\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (OPPO)*

(Replaces R4-2016618)

**Discussion:**

The contribution summarized email discussion thread [97e][116] NR\_R16\_Maintenance. The email thread was moderated by Jinqiang Xing (OnePlus) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016831 WF on unsynchronized NW between n40 and n41**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **approved**.

**R4-2016839 WF on handling of interference caused by larger CBWs**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **approved**.

**R4-2016840 WF on DC\_20A\_n38A RF architecture**

*Type: other For: discussion  
 Source: LGE*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **approved**.

**R4-2016841 WF on simultaneous Rx/Tx for DC\_42\_n79**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **approved**.

**R4-2014167 CR CatF n7 NS\_46 AMPR and coexistence**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0492 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Missing the additional spurious requirement for NS\_46 large channel BWs > 20MHz.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **revised to R4-2017804**.

**R4-2017804 CR CatF n7 NS\_46 AMPR and coexistence**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0492 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2014167)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2014168 CR CatF CA\_n39-n41\_and CA\_n40-n41 Sync**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0493 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **withdrawn**.

**R4-2014169 CR CatF Cross Band Noise DC\_3\_n1\_highBW**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0358 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Missing cross band noise MSD for various interband ENDC band combinations with large NR UL BW

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2014170 ENDC Cross Band Noise with high NR BW**

*Type: other For: Approval  
 38.101-3 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **noted**.

**R4-2014317 Consideration on additional ILs and MSD levels for DC\_20\_n38 UE or V2X\_20\_n38 UE based on RF architecture**

*Type: other For: Approval  
 Source: LG Electronics France*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **noted**.

**R4-2014318 Correction on Additional ILs and MSD levels for DC\_20\_n38 UE**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0362 Cat: F (Rel-16)  
  
 Source: LG Electronics France, Huawei*

**Abstract:**

This CR is to update additional ILs and MSD levels by 3rd harmonic problem for DC\_20\_n38 UE 5G V2X UE in TS38.101-3.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **revised to R4-2017818**.

**R4-2017818 Correction on Additional ILs and MSD levels for DC\_20\_n38 UE**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0362 rev 1 Cat: F (Rel-16)  
  
 Source: LG Electronics France, Huawei*

(Replaces R4-2014318)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2014319 Discussion on MFBI for NR system**

*Type: discussion For: Action  
 Source: LG Electronics France*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **withdrawn**.

**R4-2014517 n53 bracket removal**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0506 Cat: F (Rel-16)  
  
 Source: Nokia*

**Abstract:**

RAN5 is developping test cases for n53 but this band has A-MPR values and OOB table note 6 still in brackets which means that these requriements are untestable. Furthermore some references and numbering is corrected.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2014520 TS 38.101-3: Addition of missing lower order fallbacks**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0508 Cat: B (Rel-16)  
  
 Source: Nokia, AT&T*

**Abstract:**

These configurations have relating higher order configurations already in REL16 specs. It is important to add these as a correction inorder to retain specification intergity.

DC\_2A-30A\_n2A

DC\_2A-66A\_n2A

DC\_29A-30A\_n2A

DC\_29A-30A\_n66A

DC\_30A-66A\_n66A

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **revised to R4-2016832**.

**R4-2016832 TS 38.101-3: Addition of missing lower order fallbacks**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0508 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, AT&T*

(Replaces R4-2014520)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2014521 TR 37.716-21-11: Addition of missing lower order fallbacks**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0509 Cat: B (Rel-16)  
  
 Source: Nokia, AT&T*

**Abstract:**

These configurations have relating higher order configurations already in REL16 specs. This CR captures necessary analysis into the TR.

DC\_2A-66A\_n2A

DC\_30A-66A\_n66A

DC\_2A-30A\_n2A

DC\_29A-30A\_n2A

DC\_30A-66A\_n66A

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **revised to R4-2016833**.

**R4-2016833 TR 37.716-21-11: Addition of missing lower order fallbacks**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0509 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, AT&T*

(Replaces R4-2014521)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2014582 CR to 38.101-3 (Rel-16) error correntions to configurations for CA and DC**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0367 Cat: F (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

There are errors in CA and DC configurations in Clause 5.5A and 5.5B

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2014600 CR on adding NR ovelapping bands list in TS38.307 in Rel-15**

*Type: CR For: Agreement  
 38.307 v15.6.0 CR-0031 Cat: F (Rel-15)  
  
 Source: LG Electronics France*

**Abstract:**

This CR is to update NR overlapping bands list in TS38.307.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **revised to R4-2016846**.

**R4-2016846 CR on adding NR ovelapping bands list in TS38.307 in Rel-15**

*Type: CR For: Agreement  
 38.307 v15.6.0 CR-0031 rev 1 Cat: F (Rel-15)  
  
 Source: LG Electronics France*

(Replaces R4-2014600)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2014620 CR on adding NR ovelapping bands list in TS38.307 in Rel-16**

*Type: CR For: Agreement  
 38.307 v16.4.0 CR-0032 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

**Abstract:**

This CR is to update NR overlapping bands list in TS38.307.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **revised to R4-2016847**.

**R4-2016847 CR on adding NR ovelapping bands list in TS38.307 in Rel-16**

*Type: CR For: Agreement  
 38.307 v16.4.0 CR-0032 rev 1 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

(Replaces R4-2014620)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2014883 Clarification on RF assumption for B42\_n77 and B42\_n78**

*Type: other For: Approval  
 Source: NTT DOCOMO INC.*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **noted**.

**R4-2014899 Coexistence cleanup for 38.101-1 Rel16**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0518 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

Rel-16 features several band protection requirements which are not technical possible or contain contradicting protection requirements.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2014901 Coexistence cleanup for 38.101-3 Rel16**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0379 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

Rel-16 features several band protections which are not technical possible due to sometimes TDD bands with overlapping regions are protected or similar issues. The CR focuses on correcting false protections so that a UE will not face technical impossible emission requirements.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2014915 CR for TS 38.101-3: Corrections for intra-band contiguous EN-DC configurations**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0381 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

Intra-band contiguous EN-DC configuration DC\_(n)41AB was introduced in RAN4 #94bis-e meeting through a CR (R4-2003169) which was intended for introducing new BCS for the existing EN-DC combinations, but not for brand new EN-DC configuration. This combination in principle should not be approved as it did not go through the normal TP process. In addition, the EN-DC bandwidth class “AB” has never been defined which would render DC\_(n)41AB as an invalid EN-DC configuration. Since the CR had been agreed, to avoid the iterative process of removing and reintroducing the combination, we can accept to add EN-DC BW class “AB” in Rel-16 specifications to validate this configuration. We also strongly encourage proponent companies to follow the regular process when proposing any new band combinations to avoid any potential errors being overlooked.

A few intra-band contiguous EN-DC combinations were specified with non-contigous UL configurations which should not be allowed.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2014957 CR to TS 38.101-2 on fallback group for intra-band contiguous CA (Rel-16)**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0282 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

The fallback groups for intra-band contiguous CA classes CA\_n259G and CA\_n261D in the configuration table are incorrect groups.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **revised to R4-2016837**.

**R4-2016837 CR to TS 38.101-2 on fallback group for intra-band contiguous CA (Rel-16)**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0282 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

(Replaces R4-2014957)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2015033 CR to TS38.101-1: Correction on the general requirement and configured transmitted power requirement for inter-band DC**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0532 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

For the general requirement (subclause 4.3)

The sentence agreed in R4-2006997 was not implemented in the latest spec.

For Pcmax: (subclause 6.2B.4.1)

According to the configured transmitted power single carrier, the total power reduction is (MPR+ ∆MPR) dB.

The feature of PC2 inter-band NR-DC combination is not supported in Rel-16, therefore it is no need to consider ΔPPowerClass in the formulas.

The explanation for some inter-band DC specfied terms in the formulas are missing.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2015042 Discussion on the MSD of the new channel BW for EN-DC and NR CA band combinations**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **noted**.

**R4-2015264 CR to TS 38.101-3: corrections on ACS for intra-band contiguous EN-DC**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0388 Cat: F (Rel-16)  
  
 Source: Xiaomi*

**Abstract:**

In release 16, the transmitter is set to 4 dB below PCMAX\_L,f,c for ACS case 2 which is not aligned with the requirement in release 15. The reason is that the agreed Cat A CR (R4-2000452) was not implemented accordingly when Cat F CR (R4-2000451) was implemented after RAN4 #94-e meeting.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2015299 Editorial correction on section 5.2C to 38.101-1 R16**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0534 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR corrects title for 5.2C.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2015323 Alignment of descritpion of the power class restriction for inter-band EN-DC**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0390 Cat: F (Rel-16)  
  
 Source: vivo*

**Abstract:**

The clarification for FDD-TDD ENDC HPUE has been agreed in Note 6 in Table 6.2B.1.3-1 with improved wording which is more clear. This can be also used for Note 5 to improve the consistency and better reflect the result for TDD-TDD ENDC HPUE.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2015324 Correction of delta Powerclass for Inter-band EN-DC**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0391 Cat: F (Rel-16)  
  
 Source: vivo, CMCC, China Unicom*

**Abstract:**

This is resubmission of CR R4-2010855 (CRNum: 0344). The original CR which was agreed in RAN4#96-e and also approved in RP-201504 in RAN#89, was mistakenly implemented into clause 6.2B.4.1.3a which is used for NE-DC in 38.101-3 v16.5.0. The correction for 6.2B.4.1.3 for EN-DC has to be done, and current revision to 6.2B.4.1.3a can also be kept.

-------------------

Power class 2 had been introduced for TDD-TDD ENDC and the fallback scheme had been defined in 6.2B.1.3. It has been clarified that under different conditions, the requirements for default or the supported power class would be applied and would “set the configured transmitted power as specified sub-clause 6.2B.4”

However, no revisions had been done for section 6.2B.4.1.3 which is for inter-band EN-DC for FR1. The ∆PPowerClass,EN-DC which is used to adjust this was not updated as for other cases, thus make the specification incomplete.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2015331 CR on NR power class under EN-DC**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0392 Cat: F (Rel-16)  
  
 Source: OPPO*

**Abstract:**

The capability signaling for NR part under EN-DC has been defined in RAN2 38.331, thus RAN4 spec shall be aligned.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **revised to R4-2016842**.

**R4-2016842 CR on NR power class under EN-DC**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0392 rev 1 Cat: F (Rel-16)  
  
 Source: OPPO*

(Replaces R4-2015331)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2015332 Discussion on WRC-19 requirements**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **noted**.

**R4-2015336 CR on FR2 equal PSD in UL CA (R16)**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0286 Cat: F (Rel-16)  
  
 Source: OPPO*

**Abstract:**

As discussed in R4-2015334, the equal PSD restriction in Pcmax is not needed and it has caused confusions in interpretation of requirements.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2015339 CR on sum of power for multiple transmit connectors**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0536 Cat: F (Rel-16)  
  
 Source: OPPO*

**Abstract:**

In R4-2011768, below agreements have been reached in changing the description of how to sum powers from multiple connectors. The agreement is reproduced below. Even the agreements are made for UL MIMO/TxD, it is also applicable to other cases which require summing of powers from multiple connectors.

RAN4 agree to define requirements for MOP and emission so that power is measured correctly for all implementations, including UE with transparent TxD:

Use “requirements are defined as the sum of powers from both connectors”.

This shall be interpreted as: Measure the power and emissions per connector and then sum them up afterwards.

RAN4 will clean-up all requirements related to summing the powers and emissions, including UL MIMO, UL full power transmission requirement.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **revised to R4-2016834**.

**R4-2016834 CR on sum of power for multiple transmit connectors**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0536 rev 1 Cat: F (Rel-16)  
  
 Source: OPPO*

(Replaces R4-2015339)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2015552 Consideration on Cross band isolation impact with larger BW**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **noted**.

**R4-2015553 Discussion on spurious emission about UE co-existence between band n40 and n41**

*Type: other For: Approval  
 Source: Huawei, HiSilicon, CMCC*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **noted**.

**R4-2015554 CR on spurious emission about UE co-existence between band n40 and n41**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0539 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon, CMCC*

**Abstract:**

The operators in China has a plan to use the asynchronized deployment between band n40 and n41. It’s necessary to specify the spurious emission about UE co-existence between band n40 and n41.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2015555 Discussion on asynchronous for DC\_42\_n79**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **noted**.

**R4-2015557 CR for 38.101-1 to correct the notation of SUL band combinations in order to be aligned with 38.101-3**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0540 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Based on agreed CR R4-2006997, the sentence “5.2COperating band combination for SUL” should be removed from subclause 5.2B. The headline of sub-clause 5.2C is missing.

Based on the agreed CR R4-2009948, the notation of DC\_66A\_n78(2A)\_SUL\_n78A-n86A is changed into DC\_66A\_ SUL\_n78(2A)-n86A. The notation of SUL\_n78(2A)-n86A can be aligned with 38.101-3. It’s helpfut to avoid the confusion.

Based on agreed CR R4-2009178, the sentence “6.3COutput power dynamics for SUL” should be removed from subclause 6.3B. The headline of sub-clause 6.3C is missing.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2015699 Reference measurement channels for 70 MHz CBW**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0544 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

70 MHz CBW is introduced in Rel-16 for band n77/n78, but the reference measurement channels for 70 MHz CBW are not defined.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2015729 CR to TS 38.101-3 corrections on inter-band EN-DC configurations including FR1 and FR2**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0396 Cat: F (Rel-16)  
  
 Source: CHTTL*

**Abstract:**

Few configurations in the spec are not aligned with the agreed CR, R4-2006728, “Introducing CR on new EN-DC LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-16”.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2015795 Discussion on handling the cross band isolation requirement for larger channel BW in Rel.16**

*Type: discussion For: Discussion  
 Source: CHTTL*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **noted**.

**R4-2015856 CR to TS 38.307 on release independent update for the Rel.16 EN-DC and NR CA/DC**

*Type: CR For: Agreement  
 38.307 v16.4.0 CR-0040 Cat: B (Rel-16)  
  
 Source: CHTTL, ZTE Corporation, Dish, SGS Wireless*

**Abstract:**

More Rel.16 EN-DC and NR CA/DC configurations have been introduced in latest TS 38.101-1, 38.101-2, 38.101-3, an update is needed for the release independent specification.

Note that the draft CR with same content was endorsed in RAN#96-e, R4-2011781.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **revised to R4-2016848**.

**R4-2016848 CR to TS 38.307 on release independent update for the Rel.16 EN-DC and NR CA/DC**

*Type: CR For: Agreement  
 38.307 v16.4.0 CR-0040 rev 1 Cat: B (Rel-16)  
  
 Source: CHTTL, ZTE Corporation, Dish, SGS Wireless*

(Replaces R4-2015856)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2015914 Correction to supported channel bandwidths per SUL\_n41A-n81A**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0547 Cat: F (Rel-16)  
  
 Source: Keysight Technologies UK Ltd*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2015978 Modification of FR2 MOP verification with account of the 38.213 scaling rule**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this conctribution we consider the verification of the CA MOP subject to the 38.213 power prioritization

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **noted**.

**R4-2015979 Correction to Pcmax: account of power prioritization rules for secondary cells**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0290 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Correct the specification of Pcmax for CA in view of the power prioritization rules of 38.213. Add a test case for verification of the maximum output power when the SCell power is scaled or the SCell(s) is/are dropped. Modify the definition of the (calculated) PCMAX.

The scaling rules for LTE are different when the UE configured with UL CA is power limited. For NR, an assumption that the MPR for each serving cell is the same as the MPR of the total signal could also be the baseline for intra-band CA despite different power prioritization rules; for PUSCH transmissions the SCell power levels may be reduced or SCells dropped at maximum output power. This determination of MPR would be similar to the “total A-MPR” adopted for intra-band contiguous EN-DC still recognising that the CG powers could be different. However, this should be a prerequisite for the MPR determination for intra-band CA, not the calculation of the PCMAX

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2015980 Correction to modified MPR behaviour**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0291 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Incorrect conditions for the bits in the field modifiedMPRbehavior (all defined in Rel-15).

Modified MPR behaviour introduced in an earlier release is mandatory in a later release.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2015981 Verification of the P-MPR method for EN-DC FDD-TDD power class 2**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0404 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Introduce a test case for the P-MPR solution. The (UE-based) P-MPR solution is the default for EN-DC FDD-TDD PC2 in the absence of duty-cycle capabilities. Moreover, fallback to a lower EN-DC power class is not defined for the P-MPR solution.

The total EN-DC power is always 26 dBm for the P-MPR solution, there is not fallback behaviour (unclear if this is the case under all circumstances e.g. when the combined UL duty cycle exceeds 50% or for TDD U/D configurations up to 50% UL duty cycle ).

The P-MPR method is not verified. The solution is proprietary, but it should at least make sure that the maximum power of 26 dBm can be achieved for both non-simultaneos and simultaneous (overlapping) CG transmissions when the combined duty cycle is up to 50% resulting in a 23 dBm average total EN-DC power.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2016341 CR for editorial corrections 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0557 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Editorial corrections 38.101-1

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **revised to R4-2016989**.

**R4-2016989 CR for editorial corrections 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0557 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016341)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2016342 CR for editorial corrections 38.101-2**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0297 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Editorial corrections 38.101-2

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **revised to R4-2016838**.

**R4-2016838 CR for editorial corrections 38.101-2**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0297 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016342)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2016343 CR for editorial corrections 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0413 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Editorial corrections 38.101-3

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **revised to R4-2016843**.

**R4-2016843 CR for editorial corrections 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0413 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2016343)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2016442 Replacement of void sub-clauses**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0559 Cat: D (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Sub-clauses were incorrect marked as “Void” when the intention was to reserve them for future usage.

**Discussion:**

The secretary commented that (on the coversheet) the specification number should read 38.101-1 instead of TS38.101-1. See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2016835 Replacement of void sub-clauses**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0559 rev 1 Cat: D (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2016442)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **withdrawn**.

**R4-2016451 CR to for 38.101-1: CA uplink power clarification**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0562 Cat: F (Rel-16)  
  
 Source: T-Mobile USA*

**Abstract:**

Some of the wording on UE maximum output power for carrier aggregation is unclear.

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2016458 CR for 38.101-1: Editorial corrections**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0563 Cat: D (Rel-16)  
  
 Source: T-Mobile USA*

**Abstract:**

Many editorial errors exist in 38.101-1

**Discussion:**

The secretary commented if neither UICC, ME, Radio Access Network or Core Network boxes are checked, the CR does not change anything and hence the CR is not needed. See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **agreed**.

**R4-2016483 CR for TS 38.101-1: harmonic MSD for CA\_n41-n79**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0569 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For CA\_n41-n79, the frequency range below 2506 MHz for Band n41 is not used, it is assumed before that there is no 2nd order harmonic issue due to the applicable frequency range. However, since n41 supports larger CBW, considering the spectrum regrowth for the harmonics, the interference would still cause REFSENS degradation for n79 especially for the DL channel close to 5000MHz.

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **not pursued**.

**R4-2016836 CR for TS 38.101-1: harmonic MSD for CA\_n41-n79**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0569 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016483)

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **withdrawn**.

**R4-2016592 Editorial CR to change**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0583 Cat: D (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **withdrawn**.

**R4-2016593 Editorial CR to change**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0308 Cat: D (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][116] NR\_R16\_Maintenance in R4-2016618.

**Decision:** The document was **withdrawn**.

#### 7.19.4 BS RF [WI code or TEI16]

**R4-2015966 CR to TR 38.820: correction in the NF analysis for NR BS, Rel-16**

*Type: CR For: Agreement  
 38.820 v16.0.0 CR-0001 Cat: F (Rel-16)  
  
 Source: Huawei*

**Abstract:**

During TP drafting for the 52.6 – 71 GHz SI, it was observed that the text on NF analysis for NR BS in TR 38.820 is mistakenly pointing to the NF data from ETSI TR 101 854 in table 5.5.1.2-1, instead of the summary of state-of-the-art LNA-only noise figure publications in figure 5.5.1.2-1.

Cross-reference in the NF analysis for the NR BS is corrected in order to point to the right set of data and avoid incorrect text interpretation.

**Discussion:**

Johan Sköld (Ericsson France S.A.S) objected to such a minor correction to an internal TR. See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **not pursued**.

**R4-2015967 CR to TS 37.105: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16**

*Type: CR For: Agreement  
 37.105 v16.5.0 CR-0204 Cat: F (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Referring to the Rel-16 WI on MSR\_GSM\_UTRA\_LTE\_NR, the MSR BS specification was extended with additional CS configuration (e.g. UTRA+EUTRA+NR).

WID in RP-190642 captured that only MSR BS specifications are to be affected, i.e. TS 37.104, TS 37.141.

Related MSR BS CRs are listed below:

TS 37.104: R4-1908049Introduction of requirements for NR + UTRA/GSM combinations

TS 37.141: R4-1910476Introduction of requirements for NR + UTRA/GSM combinations

Still, the referred WI has also impacted OBUE and blocking requirements, which also impacts the AAS BS specifications.

Therefore, this CR provides modifications to the AAS BS core specification TS 37.105, to reflect modification from the MSR\_GSM\_UTRA\_LTE\_NR WI which were introduced to Rel-16 MSR BS TS 37.104.

This is a resubmission of R4-2012582, updated to the latest spec version.

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **not pursued**.

**R4-2015968 CR to TS 37.145-1: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0225 Cat: F (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Referring to the Rel-16 WI on MSR\_GSM\_UTRA\_LTE\_NR, the MSR BS specification was extended with additional CS configuration (e.g. UTRA+EUTRA+NR).

WID in RP-190642 captured that only MSR BS specifications are to be affected, i.e. TS 37.104, TS 37.141.

Realted MSR BS CRs are listed below:

TS 37.104: R4-1908049Introduction of requirements for NR + UTRA/GSM combinations

TS 37.141: R4-1910476Introduction of requirements for NR + UTRA/GSM combinations

Still, the referred WI has also impacted OBUE and blocking requirements, which also impacts the AAS BS specifications, as well as the Capability Sets and test configurations were extended.

Therefore, this CR provides modifications to the AAS BS test specification TS 37.145-1, to reflect modification from the MSR\_GSM\_UTRA\_LTE\_NR WI which were introduced to Rel-16 MSR BS TS 37.141.

This is resubmission of R4-2012583.

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **not pursued**.

**R4-2015969 CR to TS 37.145-2: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0250 Cat: F (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Referring to the Rel-16 WI on MSR\_GSM\_UTRA\_LTE\_NR, the MSR BS specification was extended with additional CS configuration (e.g. UTRA+EUTRA+NR).

WID in RP-190642 captured that only MSR BS specifications are to be affected, i.e. TS 37.104, TS 37.141.

Realted MSR BS CRs are listed below:

TS 37.104: R4-1908049Introduction of requirements for NR + UTRA/GSM combinations

TS 37.141: R4-1910476Introduction of requirements for NR + UTRA/GSM combinations

Still, the referred WI has also impacted OBUE and blocking requirements, which also impacts the AAS BS specifications, as well as the Capability Sets and test configurations were extended.

Therefore, this CR provides modifications to the AAS BS test specification TS 37.145-1, to reflect modification from the MSR\_GSM\_UTRA\_LTE\_NR WI which were introduced to Rel-16 MSR BS TS 37.141.

This is a resubmission of R4-2012584, updated to the latest spec version.

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **not pursued**.

**R4-2016206 CR to 38.141-2: Correction to test system uncertainty**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0251 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Clause 4.1.2.2 and 4.1.2.3 is not aligned with Annex C and RAN4 agreements on test system uncertainty up to 43.5GHz.

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **agreed**.

**R4-2016430 CR to TS 37.105: addition of the OBUE applicability table, Rel-15**

*Type: CR For: Agreement  
 37.105 v15.10.0 CR-0212 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

In relation to the following 3 CRs for UTRA+EUTRA+NR Capability Set to Rel-16 which were postponed last meeting, it was observed that the OBUE applicability table introduced by CR in R4-1811112 to the TS 37.104 v15.4.0, was not mirrored to the AAS specidication TS 37.105 Rel-15.

The below proposal CRs are fixinig this aspect for Rel-16, while this CRs is addressing missing OBUE applicability table for Rel-15.

1

CR to TS 37.105: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16

2

CR to TS 37.145-1: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16

3

CR to TS 37.145-2: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16

NOTE: Referring to related section in TS 37.104 Rel-16 specification, the OBUE applicabiltiy table captured the following band exceptions: band 1, 7, 38, 65. Below we provide some clarification on modifications applied in this CR:

Bands 7 and 38 was introduced based on the ECC decision for non-AAS BS products – so it is not applicable to AAS.

Band 65 was introduced for Rel-16, so it is not applicable to the Rel-15 CR.

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **revised to R4-2017432**.

**R4-2017432 CR to TS 37.105: addition of the OBUE applicability table, Rel-15**

*Type: CR For: Agreement  
 37.105 v15.10.0 CR-0212 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2016430)

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **agreed**.

**R4-2017668 CR to TS 37.105: addition of the OBUE applicability table, Rel-16**

*Type: CR For: Agreement  
 37.105 v16.5.0 CR-0213 Cat: A (Rel-16)  
  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **agreed**.

**R4-2016431 CR to TS 37.145-1: addition of the OBUE applicability table, Rel-15**

*Type: CR For: Agreement  
 37.145-1 v15.7.0 CR-0232 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

In relation to the following 3 CRs for UTRA+EUTRA+NR Capability Set to Rel-16 which were postponed last meeting, it was observed that the OBUE applicability table was not mirrored to the AAS specifications for Rel-15.

The below proposal CRs are fixinig this aspect for Rel-16, while this CRs is addressing missing OBUE applicability table for Rel-15.

1

CR to TS 37.105: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16

2

CR to TS 37.145-1: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16

3

CR to TS 37.145-2: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16

NOTE: Referring to related section in TS 37.104 Rel-16 specification, the OBUE applicabiltiy table captured the following band exceptions: band 1, 7, 38, 65. Below we provide some clarification on modifications applied in this CR:

Bands 7 and 38 was introduced based on the ECC decision for non-AAS BS products – so it is not applicable to AAS.

Band 65 was introduced for Rel-16, so it is not applicable to the Rel-15 CR.

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **revised to R4-2017433**.

**R4-2017433 CR to TS 37.145-1: addition of the OBUE applicability table, Rel-15**

*Type: CR For: Agreement  
 37.145-1 v15.7.0 CR-0232 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2016431)

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **agreed**.

**R4-2017669 CR to TS 37.145-1: addition of the OBUE applicability table, Rel-16**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0233 Cat: A (Rel-16)  
  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **agreed**.

**R4-2016432 CR to TS 37.145-2: addition of the OBUE applicability table, Rel-15**

*Type: CR For: Agreement  
 37.145-2 v15.8.0 CR-0264 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

Based on the Rel-16 CR to the TS 37.145-2 in R4-2015969 ("CR to TS 37.145-1: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16"), it was identifed that there is missing OBUE applicability table in Rel-15 spec. This CR adds the missing OBUE a

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **revised to R4-2017434**.

**R4-2017434 CR to TS 37.145-2: addition of the OBUE applicability table, Rel-15**

*Type: CR For: Agreement  
 37.145-2 v15.8.0 CR-0264 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2016432)

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **agreed**.

**R4-2017670 CR to TS 37.145-2: addition of the OBUE applicability table, Rel-16**

*Type: CR For: Agreement  
 37.145-2 v16.4.0 CR-0267 Cat: A (Rel-16)  
  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][302] NR\_BSRF\_Maintenance in R4-2017400.

**Decision:** The document was **agreed**.

#### 7.19.5 RRM [WI code or TEI16]

**R4-2017003 Email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [97e][204] R16\_NR\_RRM\_maintenance. The email thread was moderated by Yang Tang (Apple) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017274**.

**R4-2017274 Email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2017003)

**Discussion:**

The contribution summarized email discussion thread [97e][204] R16\_NR\_RRM\_maintenance. The email thread was moderated by Yang Tang (Apple) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

**R4-2014280 Discussion on R16 IDLE/INACTIVE RRM requirement with SMTC2-LP**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **noted**.

**R4-2014281 CR on R16 IDLE/INACTIVE RRM requirement with SMTC2-LP**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1150 Cat: B (Rel-16)  
  
 Source: Apple*

**Abstract:**

The SMTC2-LP is missing in the R16 RRM requirement in IDLE/INACTIVE mode.

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **postponed**.

**R4-2014378 CR on TS38.133 for E-UTRAN**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1165 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

To align with Rel-15 spec, the missing sentence “where j is the first slot of the subframe” is added in A.5.5.6.1.

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **agreed**.

**R4-2014379 CR on TS38.133 for SCell activation and deactivation delay test cases**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1166 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

Some equations in A.4.5.3 are missing in v16.5.0.

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **agreed**.

**R4-2014671 Fine/rough beam assumption for CLI performance test cases**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1193 Cat: F (Rel-16)  
  
 Source: LG Electronics Inc.*

**Abstract:**

Capture fine or rough beam assumption for CLI performance test cases according to agreed WF R4-2008538.

Revise wrong table number which was not fully implemented in the specification based on agreed R4-2010024.

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **agreed**.

**R4-2014796 CR on interruptions at E-UTRA SRS carrier based switching in TS38.133**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1204 Cat: A (Rel-16)  
  
 Source: OPPO*

**Abstract:**

The interruption on active serving cells in NR SCG in FR2 is missing for EN-DC interruptions at E-UTRA SRS carrier-based switching

**Discussion:**

The secretary commented that the CR number 1204 is missing on the coversheet. See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **revised to R4-2017067**.

**R4-2017067 CR on interruptions at E-UTRA SRS carrier based switching in TS38.133**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1204 rev 1 Cat: A (Rel-16)  
  
 Source: OPPO*

(Replaces R4-2014796)

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **postponed**.

**R4-2015477 CR on maintaining L1-RSRP measurements test cases R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1273 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For CSI-RS based L1-RSRP measurement procedure tests, the L1-RSRP reporting on aperiodic CSI-RS resources need to be tested. However, in current CSI-RS based L1-RSRP measurement tests, CSI-RS is configured as periodic resources.

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **agreed**.

**R4-2015478 Discussion on MRTD/MTTD requirements for FR1 intra-band NCCA**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **noted**.

**R4-2015479 CR on MRTD/MTTD requirements for FR1 intra-band NCCA R16**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1274 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In Rel-16, non-co-located deployment is also needed for FR1 intra-band non-contiguous CA.

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **postponed**.

**R4-2015533 Update NR Frequency Band Groups to include Band n48**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1299 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The frequency band group do not include Band n48.

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **agreed**.

**R4-2015534 Update NR Frequency Band Groups to include Band n65**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1300 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The frequency band group do not include Band n65.

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **agreed**.

**R4-2015671 [CR] NR Perf Maintenance R16 Cat F**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1309 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

The following errors exist in the current test cases which mislead readers:

- In Table A.6.5.6.1.2.1-3, the configuration is for Cell 1 not Cell 2. The note should be for Cell 1 only since there is only one cell in the test.

Note that those errors are not in the R15 specifications, thus a separate R16 Category F CR is submitted to correct them.

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **agreed**.

**R4-2015792 [CR] Specify RRC processing delay in TCI state switching delay for R16 NR-U**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1330 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

In clause 8.10A.5, the value of TRRC\_processing is not given nor defined.

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **agreed**.

**R4-2015878 Correcting the range of Lmax=8 for unpaired spectrum**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1337 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The Table 8.1.1-2 refers to the Lmax value for different frequency ranges specified in 38.213. In RAN#89e, the range for Lmax=8 was changed for unpaired spectrum by CR0141v1 (RP-202015). RAN1 spesification is the source for supported Lmax (and NRLM) values, thus RAN4 spesifcation should be aligned.

This change is not changing any UE requirement or behaviour.

**Discussion:**

See email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance in R4-2017003.

**Decision:** The document was **postponed**.

#### 7.19.6 Demodulation and CSI [WI code or TEI16]

#### 7.19.7 NR MIMO OTA test methods (38.827) [FS\_NR\_MIMO\_OTA\_test]

**R4-2014289 Addition of Time Domain Alternative for Spatial Correlation Validation**

*Type: CR For: Agreement  
 38.827 v16.0.0 CR-0002 Cat: B (Rel-16)  
  
 Source: Spirent Communications*

**Abstract:**

Time Domain Techniques to validate Spatial Correlation have been agreed during R4#96e

**Discussion:**

The secretary commented that the CR number 0002 is missing on the coversheet. See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **revised to R4-2017581**.

**R4-2017581 Addition of Time Domain Alternative for Spatial Correlation Validation**

*Type: CR For: Agreement  
 38.827 v16.0.0 CR-0002 rev 1 Cat: B (Rel-16)  
  
 Source: Spirent Communications*

(Replaces R4-2014289)

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **revised to R4-2017658**.

**R4-2017658 Addition of Time Domain Alternative for Spatial Correlation Validation**

*Type: CR For: Agreement  
 38.827 v16.0.0 CR-0002 rev 2 Cat: B (Rel-16)  
  
 Source: Spirent Communications*

(Replaces R4-2017581)

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **agreed**.

**R4-2016211 Update of FR2 probe configuration**

*Type: CR For: Agreement  
 38.827 v16.0.0 CR-0003 Cat: F (Rel-16)  
  
 Source: Keysight Technologies UK Ltd*

**Abstract:**

To be produced once agreement on probe configuration has been reached

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **agreed**.

**R4-2016227 Number of Slots for NR MIMO OTA testing**

*Type: other For: Endorsement  
 Source: vivo, CAICT*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

**R4-2016228 Number of Slots for NR MIMO OTA testing**

*Type: CR For: Agreement  
 38.827 v16.0.0 CR-0004 Cat: F (Rel-16)  
  
 Source: vivo, CAICT*

**Abstract:**

The minimum number of slots has not been defined for NR MIMO OTA test method.

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **revised to R4-2017582**.

**R4-2017582 Number of Slots for NR MIMO OTA testing**

*Type: CR For: Agreement  
 38.827 v16.0.0 CR-0004 rev 1 Cat: F (Rel-16)  
  
 Source: vivo, CAICT*

(Replaces R4-2016228)

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **agreed**.

**R4-2016544 TP to 38.827 on channel model rotations**

*Type: CR For: Agreement  
 38.827 v16.0.0 CR-0005 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

The secretary commented that the document type is wrong (pCR instead of CR), there is no coverhseet and the content also seems to be from another document (R4-2006742?). Session chair: The title also needs to be changed to avoid misleading.

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **not pursued**.

**R4-2017639 TP to 38.827 on channel model rotations**

*Type: CR For: Agreement  
 38.827 v16.0.0 CR-0005 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **withdrawn**.

**R4-2016546 pCR to 38.827 on base station beamforming configuration**

*Type: CR For: Agreement  
 38.827 v16.0.0 CR-0006 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

The secretary commented that the document type is wrong (pCR instead of CR), there is no coverhseet and the content also seems to be from another document (R4-2006742?). Session chair: The title also needs to be changed to avoid misleading.

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **not pursued**.

**R4-2017640 CR to 38.827 on base station beamforming configuration**

*Type: CR For: Agreement  
 38.827 v16.0.0 CR-0006 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **withdrawn**.

**R4-2016586 CR for 38.827 on corrections**

*Type: CR For: Agreement  
 38.827 v16.0.0 CR-0007 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

corrections

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **revised to R4-2017641**.

**R4-2017641 CR for 38.827 on corrections**

*Type: CR For: Agreement  
 38.827 v16.0.0 CR-0007 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2016586)

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **agreed**.

## 8 Rel-16 UE feature list

GTW session (November 10, 2020)

**Issue 1-6: SFTD measurement for NR neighbor cell**

* Option 1 (MTK):

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Index | Feature group | Components | Prerequisite feature groups | Need for the gNB to know if the feature is supported | Applicable to the capability signalling exchange between UEs (V2X WI only)”. | **Consequence if the feature is not supported by the UE** | **Type**  **( 1) Per UE or 2) Per Band or 3) Per BC or 4) Per FS or 5) Per FSPC)** | Need of FDD/TDD diff. | Need of FR1/FR2 diff. | Capability interpretation for mixture of FDD/TDD and/or FR1/FR2 | Note | Mandatory  /Optional |
| 4-6 | SFTD measurement for NR neighbor cell | Support of SFTD measurement with and without measurement gaps between the NR Pcell/PSCell and NR neighbor cells in a band where shared spectrum channel access must be used | sftd-MeasNR-Neigh | Yes | N/A | Network cannot configure SFTD measurement between the NR Pcell/PSCell and NR neighbor cells in a band where shared spectrum channel access must be used | Per band | Yes | N/A | N/A |  | Optional with capability signaling |

Discussion:

MTK: although some companies mention that this is RAN2 feature, we think it is helpful to discuss in RAN4.

QC: it is up to RAN2 to decide whether the feature is need

E///: Agree with QC. We had a WF last year that we introduce SFTD measurements for Scenario B in the context of NR-U. If we introduce new capability then we’ll need new requirements.

MTK: agree that RAN2 can make decision. We already did similar for other WIs. We do not suggest to remove the requirements.

Huawei: would like to further check if there are any restrictions.

Nokia: Agree with QC and E/// comments.

Apple: No strong view whether it should be discussed in RAN4 or RAN2. Need further check if it can be per UE or per Band

ZTE: Discussion should take place in RAN2.

Chair: based on majority the preference is to trigger discussion in RAN2

Conclusion: No further discussion in RAN4 on issue 1-6.

**Issue 6-1: feature 9-8, 9-9, 9-10**

* UE feature list

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Index | Feature group | Components | Prerequisite feature groups | Need for the gNB to know if the feature is supported | Applicable to the capability signalling exchange between UEs (V2X WI only)”. | **Consequence if the feature is not supported by the UE** | **Type**  **( 1) Per UE or 2) Per Band or 3) Per BC or 4) Per FS or 5) Per FSPC)** | Need of FDD/TDD diff. | Need of FR1/FR2 diff. | Capability interpretation for mixture of FDD/TDD and/or FR1/FR2 | Note | Mandatory  /Optional |
| [9-8] | [Multiple SCell activation] | 1) Support of multiple SCell activation RRM requirement |  | Yes | N/A | Network cannot know the multiple SCell activation delay and corresponding interruption length for this UE. Therefore, either network may not trigger multiple SCell activation or there will be performance degradation | Per UE | No | Yes | N/A | Functionality of multiple SCell activation has already been supported since R15. RRM requirement is expected to be introduced in R16. Thus, R16 UE shall meet corresponding RRM requirement. | Optional with capability signalling |
| [9-9] | [UE specific CBW change] | 1) Support of UE-specific CBW change RRM requirement |  | Yes | N/A | Network cannot know the UE specific CBW change delay and corresponding interruption length for this UE. There will be performance degradation when UE specific CBW changes | Per UE | No | No | N/A | Functionality of UE specific CBW change has already been supported since R15. RRM requirement is expected to be introduced in R16. Thus, R16 UE shall meet corresponding RRM requirement. | Optional with capability signalling |
| [9-10] | [Spatial relation switch for uplink] | 1) Support of UL spatial relation switch RRM requirement |  | Yes | N/A | Network cannot know the uplink spatial relation switch delay for this UE. There will be performance degradation when uplink spatial relation changes | Per UE | No | No | N/A | Functionality of uplink spatial relation change has already been supported since R15. RRM requirement is expected to be introduced in R16. Thus, R16 UE shall meet corresponding RRM requirement. | Optional with capability signalling |

* Proposals
  + Option 1: Specify feature group 9-8/9/10 as optional (Apple, Intel)
  + Option 2: Remove feature groups [9-8], [9-9], [9-10] (MTK, Qualcomm Incorporated, CMCC, KDDI, AT&T, Ericsson, Nokia, T-Mobile USA, China Telecom, Vodafone, Verizon, Softbank)
* Background: Main session agreements
  + The multiple SCell activation RRM requirement, UE-specific CBW change RRM requirement, and UL spatial relation switch RRM requirement will apply to R16 UEs, not R15 UEs.
  + Further discussion on the need of feature groups 9-8/9/10 will be carried out in RRM session. Note the removal of these feature groups means they are mandatory.
* Discussion
  + QC: We suggest to follow a principle that RAN4 should not define optional requirements.
  + E///: Support QC. There were no changes in RAN2 specs. UE needs to meet the requirements from Rel-16. BS knows the release and can handle this.
  + CMCC: Support QC and E///.
  + Intel: Functionality is available from Rel-15 but the requirements are defined in Rel-16. Rel-15 UEs may not fulfil the requirements. R15 and R16 UEs need to be treated differently by the network. Option 1 is to have release 15 requirements (i.e. reconsider previous agreement); Alternatively the gNB needs to differentiate UE implementations. We can introduce new signalling in Rel16; or we can assume that gNB will rely on information on the UE release (i.e. accessStratum).
  + ZTE: Support Option 2. Requirements shall not be optional. If we make the requirements as optional then some Rel-16 UEs may not be able to meet the requirements
  + Nokia: Support Option 2.
  + Apple: Nobody mentioned we would like to suggest optionality for the requirements. Our concern is about the procedure on how to treat these features in the UE feature list. Checked with RAN1/2 colleagues. None of these features were discussed in other WGs. Not clear why we assume that these features are mandatory by default. We should discuss optionality of these features and it is pre-mature to assume all of them are mandatory (especially for UE CBW switching).
  + Chair: see 2 different issues
    - How to differentiate R15 and R16 UEs
    - Whether and why the requirements shall be mandatory
  + E///: We have signalling defined which indicates the release of the UE. By knowing the UE release the gNB can adopt its scheduling decisions. In Rel-15 we have defined capabilities for optional features. Our understanding that these are mandatory Rel-15 features. All these features were already defined by RAN2.
  + QC: The network can use release of the UE to differentiate whether UE can support the requirements. For mandatory/options – this is already defined by RAN2 as mandatory. If there is no capability bit then it is mandatory by default.
  + Intel: To Ericsson and QC, UE signals accessStratumRelease but it does not link to the features of the particular release. Suggest to clarify with RAN2 if we can rely on this signalling.
    - E///: All the network needs to know is the release of the UE. accessStratumRelease is used to provide information on the UE. accessStratumRelease may not be required to be linked to the particular feature.
  + ZTE: Same view as E/// and QC. Network needs to know the release of the UE (different vendors may have different implementations, accessStratumRelease is one way). We should not discuss whether the requirements are mandatory or optional. They are always mandatory.
  + MTK: Agree with E///, QC, ZTE.
  + CMCC: Rel-16 requirements are mandatory. Network shall know the release of the UE. Apple seem to challenge whether the features are mandatory. These are RAN2 features and shall be discussed there.
  + Apple: Our question was not answered. We cannot assume that the features are automatically mandatory. The system will not get broken if UE does not support the features. These features are more like an optimization. We are fine to compromise. The situation will repeat in the future for other features and it is helpful to avoid such situations.
  + Intel: Agree that NW needs to know the release of the UE. In our understanding the accessStratumRelease may not work well. It defined ASN.1 release and not really characterize the release of the UE.
  + Chair: send a separate LS to RAN2 to check on Release signalling. CMCC will provide a draft.
* Agreement:
  + Remove feature groups [9-8], [9-9], [9-10] from the RAN4 UE feature list
    - The respective requirements are mandatory to be supported for Rel-16 UEs
    - It is RAN4 understanding that the network will know the release of the UE.
    - Further check with RAN2 if accessStratumRelease signalling can be used to provide information on the release of the UE.

**Issue 12-4: per-FR gap capability in Rel-15**

* + Proposal 1: RAN4 should avoid dependencies between features that are not functionally related.
  + Proposal 2: Dependencies between per-FR gaps and requirements/features that are not functionally related should be eliminated from the specifications or separate capabilities should be created.
  + Proposal 3. The per-FR gap capability should be modified from per UE to per band combination.
* Background: Main session agreements
  + No changes to R15 UE capabilities
  + Further discussion is needed on the following aspects:
    - Whether this can be considered for R16 UE feature discussion.
    - How R16 UE features will be affected.
* Discussion
  + QC: For P3, R15 changes can be done in a backward compatible manner. See more details in our response to thread 117. For P2, we mean delays for BWP switching, interruptions for activation/deactivation.
  + Apple: In last week GTW companies expressed concerns. Per-FR gap was used as a side condition for many RRM requirements. Per-FR gap characterizes UE architecture. Changing the definition of the per-FR gap we would like to understand why it is absolutely necessary. It will have impact on some fundamental features and requires many changes. Need to see more justification. Prefer current definition.
  + E///: Not clear how per-BC signalling helps. Are we talking of the BC of the serving cells or the BC of the measurement objects?
  + ZTE: Originally the intention of per-FR gap capability is to characterize that there are no interruptions from the RF perspective. If we have interruptions then this means we have a single RFIC. It is quite late to change and prefer to discuss in Rel-17.
  + Huawei: P1/P2 is one way to address QC concern but it will cause more uncertainty. We are ok to take Proposal 3 from Rel-16. Not ok to introduce new features.
  + QC: For P1/P2 we are talking about bundling the features. We have a different interpretation of per-FR gap. Bundling too many requirements with per-FR gap makes it complicated to implement. P3 addresses baseband complexity constraints. We suggest to change the feature applicability.
  + MTK: For per-BC capability for outside gap we have 2 searchers and not clear why BC would change how many searchers UE can support.
    - QC: these are the assumptions to derive min requirements. UE may still have a different implementation. It depends on processing power.
  + Apple: not clear how the per-BC signalling would work. Need information on the measurement object.
    - QC: This is not related to measurement object.
* Conclusion: Continue discussion in RAN4 98e.

**Issue 6-2: feature 9-11**

* UE feature list

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Index | Feature group | Components | Prerequisite feature groups | Need for the gNB to know if the feature is supported | Applicable to the capability signalling exchange between UEs (V2X WI only)”. | **Consequence if the feature is not supported by the UE** | **Type**  **( 1) Per UE or 2) Per Band or 3) Per BC or 4) Per FS or 5) Per FSPC)** | Need of FDD/TDD diff. | Need of FR1/FR2 diff. | Capability interpretation for mixture of FDD/TDD and/or FR1/FR2 | Note | Mandatory  /Optional |
| [9-11] | [Parallel processing of BWP switching in different frequency ranges] | Support of processing BWP switching, in parallel, across FR1 and FR2 | RAN4 3-1 | Yes | N/A | Network cannot know whether UE is capable of processing BWP switching, in parallel, in FR1 and FR2. | Per UE | No | No | N/A | RAN4 agreement:  Delay requirements for DCI/timer based BWP switch = ;  If UE is capable of this feature; then N is the # of simultaneous BWP switching in the same FR.  If UE is not capable; then N is the # of simultaneous BWP switching in FR1 and FR2. | Optional with capability signaling |

* Proposals
  + Option 1 (MTK): Remove feature group 9-11
* Discussion
  + Intel: Agree with MTK. This was discussed in the last meeting. The decision was made to couple this with the per-FR gap
  + QC: fine to remove
* Agreement: Remove feature 9-11 [Parallel processing of BWP switching in different frequency ranges] from the UE feature list

**R4-2016619 Email discussion summary for [97e][117] R16\_UE\_ feature**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

**Discussion:**

The contribution summarized email discussion thread [97e][117] R16\_UE\_ feature. The email thread was moderated by Xiaoran Zhang (China Mobile Com. Corporation) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016961**.

**R4-2016961 Email discussion summary for [97e][117] R16\_UE\_ feature**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

(Replaces R4-2016619)

**Discussion:**

The contribution summarized email discussion thread [97e][117] R16\_UE\_ feature. The email thread was moderated by Xiaoran Zhang (China Mobile Com. Corporation) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016849 LS on updated Rel-16 RAN4 UE features lists for NR and LTE**

*Type: LS out For: Approval  
 to RAN2, RAN1  
 Source: RAN4*

**Discussion:**

Gene Fong (Qualcomm) expressed a sustained objection for feature group item 4-2 in the attachement. The chairman declared item 4-2 tobe used as a working agreement.

See email discussion summary for [97e][117] R16\_UE\_ feature in R4-2016619.

**Decision:** The document was **approved**.

Attachments to this outgoing LS: R4-2016850

**R4-2016850 Updated RAN4 UE features list for Rel-16**

*Type: other For: discussion  
 Source: CMCC*

**Discussion:**

Gene Fong (Qualcomm) expressed a sustained objection for feature group item 4-2. The chairman declared item 4-2 to be used as a working agreement.

Chair: For FG 2-19, additional requirements for type 2 UEs can be discussed.

Chair: For NR-U, UE support of DL wideband operation mode 1 is mandatory

Chair: This tdoc has sustained opposition by one company. To progress the work, a working agreement is made.

See email discussion summary for [97e][117] R16\_UE\_ feature in R4-2016619.

**Decision:** The document was **approved**.

**R4-2017803 LS on Rel-16 mandatory RRM requirements**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

**Discussion:**

Chair: Check with RAN1 on the statement “An RB set corresponds to 20MHz channel bandwidth on which a channel access procedure is performed in shared spectrum” in the LS

See email discussion summary for [97e][117] R16\_UE\_ feature in R4-2016619.

**Decision:** The document was **approved**.

**R4-2014234 On R16 UE feature list**

*Type: discussion For: Agreement  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][117] R16\_UE\_ feature in R4-2016619.

**Decision:** The document was **noted**.

**R4-2014483 On the Optionality of RAN4 Requirements**

*Type: other For: Approval  
 Source: Qualcomm Incorporated, CMCC, KDDI, AT&T, Ericsson, Nokia, T-Mobile USA, China Telecom*

**Discussion:**

See email discussion summary for [97e][117] R16\_UE\_ feature in R4-2016619.

**Decision:** The document was **withdrawn**.

**R4-2014488 Overloading of the Per-FR gap capability**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][117] R16\_UE\_ feature in R4-2016619.

**Decision:** The document was **noted**.

**R4-2014627 Discussion on UE feature list**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][117] R16\_UE\_ feature in R4-2016619.

**Decision:** The document was **noted**.

**R4-2015089 Clarification of intra-bandENDC-Support**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][117] R16\_UE\_ feature in R4-2016619.

**Decision:** The document was **noted**.

**R4-2015566 Views on Rel-16 NR UE feature list**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][117] R16\_UE\_ feature in R4-2016619.

**Decision:** The document was **noted**.

**R4-2015798 On NRU operation modes and capabilities**

*Type: discussion For: Approval  
 Source: LG Electronics Finland*

**Abstract:**

During the RAN1#101 meeting and RAN4#96 meeting NRU UE capabilities have been discussed.

This contribution further discusses this topic and proposes a way forward.

**Discussion:**

See email discussion summary for [97e][117] R16\_UE\_ feature in R4-2016619.

**Decision:** The document was **noted**.

**R4-2015982 On the FG**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this contribution we consider the tentative FG 2-22 and the remaining FG for NR-U (including RAN1 placeholders)

**Discussion:**

See email discussion summary for [97e][117] R16\_UE\_ feature in R4-2016619.

**Decision:** The document was **noted**.

**R4-2016030 On the Optionality of RAN4 Requirements**

*Type: other For: Approval  
 Source: Qualcomm Incorporated, CMCC, KDDI, AT&T, Ericsson, Nokia, T-Mobile USA, China Telecom, Vodafone, Verizon, Softbank*

**Discussion:**

See email discussion summary for [97e][117] R16\_UE\_ feature in R4-2016619.

**Decision:** The document was **noted**.

## 9 Rel-16 spectrum related Work Items for NR

### 9.1 LTE/NR spectrum sharing in band 48/n48 frequency range [NR\_n48\_LTE\_48\_coex-Core]

**R4-2016620 Email discussion summary for [97e][118] NR\_n48\_LTE\_48\_coex**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [97e][118] NR\_n48\_LTE\_48\_coex. The email thread was moderated by Alexander Sayenko (Apple GmbH) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016962**.

**R4-2016962 Email discussion summary for [97e][118] NR\_n48\_LTE\_48\_coex**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2016620)

**Discussion:**

The contribution summarized email discussion thread [97e][118] NR\_n48\_LTE\_48\_coex. The email thread was moderated by Alexander Sayenko (Apple GmbH) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

Chair: It is agreed during the email discussion that for the dynamic spectrum sharing operation in band 48/n48 frequency range, what is supported in NR for both BS and UE can ensure UE emission requirements through appropriate configuration/scheduling.

**Decision:** The document was **noted**.

#### 9.1.1 General [NR\_n48\_LTE\_48\_coex-Core]

#### 9.1.2 Channel raster, sync raster, and UL shift [NR\_n48\_LTE\_48\_coex-Core]

**R4-2014174 B48/n48 Allocation shift emission containment**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][118] NR\_n48\_LTE\_48\_coex in R4-2016620.

**Decision:** The document was **noted**.

**R4-2014890 LTE/NR spectrum sharing in band 48/n48 frequency range**

*Type: discussion For: Decision  
 Source: Apple Inc., Comcast*

**Discussion:**

See email discussion summary for [97e][118] NR\_n48\_LTE\_48\_coex in R4-2016620.

**Decision:** The document was **noted**.

**R4-2014891 Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0516 Cat: B (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in band 48/n48 frequency range, DL and UL sub-carrier grids have to be aligned, which in some deployment and configurations case will require shifting the NR center frequency by -/+100kHz shift. A new NS value is added so that the UE is aware of the fact that the guard band is smaller.

**Discussion:**

Chair: it is agreed that there is no further change required to either 38.101-1 or 38.104.

See email discussion summary for [97e][118] NR\_n48\_LTE\_48\_coex in R4-2016620.

**Decision:** The document was **not pursued**.

**R4-2015086 n48 DSS operation with 100 kHz channel raster shift**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][118] NR\_n48\_LTE\_48\_coex in R4-2016620.

**Decision:** The document was **noted**.

**R4-2015350 Views on DSS in band 48/n48**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][118] NR\_n48\_LTE\_48\_coex in R4-2016620.

**Decision:** The document was **noted**.

**R4-2016140 LTE/NR spectrum sharing in band 48/n48 frequency range**

*Type: other For: Approval  
 Source: Ericsson GmbH, Eurolab*

**Discussion:**

See email discussion summary for [97e][118] NR\_n48\_LTE\_48\_coex in R4-2016620.

**Decision:** The document was **noted**.

**R4-2016372 The remaining issue on n48 DSS**

*Type: discussion For: (not specified)  
 Source: Google Inc.*

**Discussion:**

See email discussion summary for [97e][118] NR\_n48\_LTE\_48\_coex in R4-2016620.

**Decision:** The document was **noted**.

## 10 Rel-17 spectrum related Work Items for NR

**R4-2016621 Email discussion summary for [97e][119] NR\_Baskets\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [97e][119] NR\_Baskets\_Part\_1. The subject for discussion was NR Basked WIs. The email thread was moderated by Iwajlo Angelow (Nokia Italy) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

### 10.1 NR intra band Carrier Aggregation for xCC DL/yCC UL including contiguous and non-contiguous spectrum (x>=y) [NR\_CA\_R17\_intra]

#### 10.1.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R17\_intra-Core /Perf]

**R4-2015916 Revised WID NR Intra-band Rel-17**

*Type: WID revised For: Endorsement  
 Source: Ericsson*

**Abstract:**

Revised WID NR Intra-band Rel-17

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2015919 CR introduction completed band combinations Rel-17 NR Intra-band -**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0548 Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR introduction completed band combinations Rel-17 NR Intra-band -> 38.101-1

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015920 CR introduction completed band combinations Rel-17 NR Intra-band -**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0287 Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR introduction completed band combinations Rel-17 NR Intra-band -> 38.101-2

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015924 TR 38.717-01-01 v0.2.0 Rel-17 NR Intra-band**

*Type: draft TR For: Agreement  
 38.717-01-01 v0.1.0  
 Source: Ericsson*

**Abstract:**

TR 38.717-01-01 v0.2.0 Rel-17 NR Intra-band

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.1.2 UE RF for FR1 [NR\_CA\_R17\_intra-Core]

**R4-2014493 UE Architecture and DL MIMO Aspects for Supporting n77(3A) DL CA**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc. SoftBank Corp.*

**Abstract:**

for n77(3A) DL CA, some companies raised a concern about the impact on the RF front end and RF transceiver architectureand the fact the 4x4 DL MIMO has mandatory support for band n77. In this contribution, we discuss these aspects to reach a common unders

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

**R4-2015069 MSD for CA\_n71(2A)**

*Type: pCR For: Approval  
 38.717-01-01 v0.1.0  
 Source: MediaTek Inc.*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016666**.

**R4-2016666 MSD for CA\_n71(2A)**

*Type: pCR For: Approval  
 38.717-01-01 v0.1.0  
 Source: MediaTek Inc.*

(Replaces R4-2015069)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

**R4-2015431 DraftCR for 38.101-1 to add BCS1 for CA\_n77(2A)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add BCS1 for CA\_n77(2A).

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2016329 TP to TR 38.717-01-01 to include CA\_n2(2A)**

*Type: pCR For: Approval  
 38.717-01-01 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP to TR 38.717-01-01 to include CA\_n2(2A)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2016330 TP to TR 38.717-01-01 to include CA\_n5(2A)**

*Type: pCR For: Approval  
 38.717-01-01 v0.1.0  
 Source: Ericsson, Verizon, MediaTek*

**Abstract:**

TP to TR 38.717-01-01 to include CA\_n5(2A)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016679**.

**R4-2016679 TP to TR 38.717-01-01 to include CA\_n5(2A)**

*Type: pCR For: Approval  
 38.717-01-01 v0.1.0  
 Source: Ericsson, Verizon, MediaTek*

(Replaces R4-2016330)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2016331 TP to TR 38.717-01-01 to include CA\_n77(3A)**

*Type: pCR For: Approval  
 38.717-01-01 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP to TR 38.717-01-01 to include CA\_n77(3A)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016913**.

**R4-2016913 TP to TR 38.717-01-01 to include CA\_n77(3A)**

*Type: pCR For: Approval  
 38.717-01-01 v0.1.0  
 Source: Ericsson, Verizon*

(Replaces R4-2016331)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

**R4-2016332 TP to TR 38.717-01-01 to include CA\_n77(4A)**

*Type: pCR For: Approval  
 38.717-01-01 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP to TR 38.717-01-01 to include CA\_n77(4A)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **withdrawn**.

**R4-2016339 TP to TR 38.717-01-01 to update MSD values CA\_n71(2A)**

*Type: pCR For: Approval  
 38.717-01-01 v0.1.0  
 Source: Ericsson, T-Mobile US*

**Abstract:**

TP to TR 38.717-01-01 to update MSD values CA\_n71(2A)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

#### 10.1.3 UE RF for FR2 [NR\_CA\_R17\_intra-Core]

### 10.2 NR inter-band Carrier Aggregation/Dual Connectivity for 2 bands DL with x bands UL (x=1, 2) [NR\_CADC\_R17\_2BDL\_xBUL]

**R4-2016622 Email discussion summary for [97e][120] NR\_Baskets\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [97e][120] NR\_Baskets\_Part\_2. The subject for discussion was NR Basket WIs. The email thread was moderated by Johannes Hejselbaek (Nokia Denmark) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

#### 10.2.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R17\_2BDL\_xBUL-Core/Perf]

**R4-2015057 Revised WID on Rel-17 NR Inter-band CA\_DC xUL\_2DL (x=1,2)**

*Type: WID revised For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2015058 Draft CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-1**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2017805 CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0585 Cat: B (Rel-17)  
  
 Source: ZTE*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015059 Draft CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2017806 CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0426 Cat: B (Rel-17)  
  
 Source: ZTE*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **not concluded**.

**R4-2015184 TR 38.717-02-01 v0.2.0**

*Type: draft TR For: Agreement  
 38.717-02-01 v0.2.0  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.2.2 NR inter band CA without any FR2 band(s) [NR\_CADC\_R17\_2BDL\_xBUL-Core]

**R4-2014110 TP for TR 38.717-02-01 CA\_n41-n77**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **noted**.

**R4-2014111 TP for TR 38.717-02-01 CA\_n41-n78**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016680**.

**R4-2016680 TP for TR 38.717-02-01 CA\_n41-n78**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014111)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014131 TP for TR 38.717-02-01 CA\_n2-n66**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Samsung, TELUS, Bell mobility*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014141 Draft CR for 38.101-1 to introduce new inter-band CA for 2bands DL with x bands UL(x=1, 2) within FR1**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Samsung, TELUS, Bell mobility*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2014522 draft CR for NR inter-band CA for 2 bands DL**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Nokia, T-Mobile USA*

**Abstract:**

Addition of higher order configurations.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016681**.

**R4-2016681 draft CR for NR inter-band CA for 2 bands DL**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Nokia, T-Mobile USA*

(Replaces R4-2014522)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2014524 TP for TR 38.717-02-01: CA\_n41-n77**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Nokia, T-Mobile USA*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016682**.

**R4-2016682 TP for TR 38.717-02-01: CA\_n41-n77**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Nokia, T-Mobile USA*

(Replaces R4-2014524)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014525 TP for TR 38.717-02-01: CA\_n71A-n77A**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Nokia, T-Mobile USA*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016683**.

**R4-2016683 TP for TR 38.717-02-01: CA\_n71A-n77A**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Nokia, T-Mobile USA*

(Replaces R4-2014525)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014842 DraftCR to 38.101-1: Introduce NR CA configurations for CA\_n2A-n48 and CA\_n48-n66A combinations**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Verizon Denmark*

**Abstract:**

Additional inter-band CA and DC configurations are missing in the spec for CA\_n2A-n48 and CA\_n48-n66A combinations

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2014876 TP for TR 37.717-02-01: CA\_n5-n48**

*Type: discussion For: Approval  
 Source: Verizon Denmark*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016684**.

**R4-2016684 TP for TR 37.717-02-01: CA\_n5-n48**

*Type: discussion For: Approval  
 Source: Verizon Denmark*

(Replaces R4-2014876)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015045 Draft CR to TS38.101-1: Add missing OOB blocking exception combination**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: ZTE Corporation*

**Abstract:**

For CA\_n5-n78 and CA\_n28-n78, it needs to define OOB blocking exception requirements

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015046 TP for TR38.717-02-01\_ CA\_n34A-n79A**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015075 draftCR for CA\_n66(2A)-n77A, CA\_n66A-n77(2A) and CA\_n66(2A)-n77(2A) BCS1**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction of CA\_n66(2A)-n77A, CA\_n66A-n77(2A) and CA\_n66(2A)-n77(2A)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016685**.

**R4-2016685 draftCR for CA\_n66(2A)-n77A, CA\_n66A-n77(2A) and CA\_n66(2A)-n77(2A) BCS1**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015075)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015076 TP to TR 38.717-02-01: CA\_n5-n25**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016686**.

**R4-2016686 TP to TR 38.717-02-01: CA\_n5-n25**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015076)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015077 TP to TR 38.717-02-01: CA\_n25-n77**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016687**.

**R4-2016687 TP to TR 38.717-02-01: CA\_n25-n77**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015077)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015082 TP to TR 38.717-02-01 to correct CA\_n7(2A)-n66 BCS**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015425 DraftCR for 38.101-1 to add BCS1 for CA\_n20A-n28A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add BCS1 for CA\_n20A-n28A.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **not pursued**.

**R4-2016688 DraftCR for 38.101-1 to add BCS1 for CA\_n20A-n28A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015426 DraftCR for 38.101-1 to add BCS1 for CA\_n1A-n78A CA\_n1A-n78(2A)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add BCS1 for CA\_n1A-n78A CA\_n1A-n78(2A).

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015427 DraftCR for 38.101-1 to add BCS1 for CA\_n8A-n78A and CA\_n8A-n78(2A)\_BCS0**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add BCS1 for CA\_n8A-n78A and CA\_n8A-n78(2A)\_BCS0.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015428 TP for TR 38.717-02-01: to add UL configuration for CA\_n78A-n79A and CA\_n78(2A)-n79A\_BCS0**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016689**.

**R4-2016689 TP for TR 38.717-02-01: to add UL configuration for CA\_n78A-n79A and CA\_n78(2A)-n79A\_BCS0**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015428)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015429 TP for TR 38.717-02-01: CA\_n8A-n28A**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016690**.

**R4-2016690 TP for TR 38.717-02-01: CA\_n8A-n28A**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015429)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015430 TP for TR 38.717-02-01: CA\_n3A-n7A**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016691**.

**R4-2016691 TP for TR 38.717-02-01: CA\_n3A-n7A**

*Type: pCR For: Approval  
 38.717-02-01 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015430)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

#### 10.2.3 NR inter band CA with at least one FR2 band [NR\_CADC\_R17\_2BDL\_xBUL-Core]

**R4-2014813 draft CR 38.101-3 to add DC\_n1-n257 and DC\_n79-n257**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: NTT DOCOMO, INC.*

**Abstract:**

Adding configurations to existing DC combinations. The following NR DC configurations are specified by draft CR according to the agreement described in R4-2005647 since corresponding NR CA configurations have been already aprroved.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2014843 DraftCR to 38.101-3: Introduce inter-band CA and DC configurations including FR2**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Verizon Denmark*

**Abstract:**

Introduce NR CA configurations for CA\_n48-n260 and CA\_n66-261

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016692**.

**R4-2016692 DraftCR to 38.101-3: Introduce inter-band CA and DC configurations including FR2**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Verizon Denmark*

(Replaces R4-2014843)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015131 Draft CR for 38.101-3 to add n78C in DC\_n78-n257**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: SK Telecom, Samsung, Ericsson, Nokia, LGE*

**Abstract:**

DC combos of n78-n257 are updated to add DL n78C.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **not pursued**.

**R4-2016693 Draft CR for 38.101-3 to add n78C in DC\_n78-n257**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: SK Telecom, Samsung, Ericsson, Nokia, LGE*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015217 draftCR to introduce CADC\_n1-n258 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015218 draftCR to introduce CADC\_n40-n258 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015219 draftCR to introduce CADC\_n78-n258 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2016308 CR to add CBW 25, 30 and 70 MHz for n78 in n78-n258 configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Ericsson, Telstra*

**Abstract:**

Adding CBW 25, 30 and 70 MHz for n78 in n78-n258 configurations

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

### 10.3 DC of 1 LTE band and 1 NR band [DC\_R17\_1BLTE\_1BNR\_2DL2UL]

#### 10.3.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_1BLTE\_1BNR\_2DL2UL-Core/Perf]

**R4-2014786 TR 37.717-11-11 v0.2.0 Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL)**

*Type: draft TR For: Agreement  
 37.717-11-11 v0.1.0  
 Source: CHTTL*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2014787 Revised WID for Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL)**

*Type: WID revised For: Endorsement  
 Source: CHTTL*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2014788 Big CR for Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL)**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0376 Cat: B (Rel-17)  
  
 Source: CHTTL*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.3.2 EN-DC without FR2 band [DC\_R17\_1BLTE\_1BNR\_2DL2UL-Core]

**R4-2014030 TP for 37.717-11-11 for DC\_8\_n2**

*Type: pCR For: Approval  
 37.717-11-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016655**.

**R4-2016655 TP for 37.717-11-11 for DC\_8\_n2**

*Type: pCR For: Approval  
 37.717-11-11 v0.1.0  
 Source: Huawei,HiSilicon*

(Replaces R4-2014030)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014070 TP to TR 37.717-11-11: DC\_18A\_n28A**

*Type: pCR For: Approval  
 37.717-11-11 v0.1.0  
 Source: KDDI Corporation*

**Abstract:**

This contribution is a text proposal for TR 37.717-11-11 to include DC\_18A\_28A.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016658**.

**R4-2016658 TP to TR 37.717-11-11: DC\_18A\_n28A**

*Type: pCR For: Approval  
 37.717-11-11 v0.1.0  
 Source: KDDI Corporation*

(Replaces R4-2014070)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014142 Draft CR for 38.101-3 to introduce new inter-band EN-DC (1NR band +1LTE band) within FR1**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Samsung, SK Telecom, KT, KDDI, TELUS, Bell mobility*

**Abstract:**

Adding following new inter-band EN-DC configurations and maximum output power within FR1 cause their fallback mode have existed in current Spec

DC\_2A\_n66(2A)

DC\_3C\_n77A

DC\_3C\_n77(2A)

DC\_5A\_n78C

DC\_7A-7A\_n78C

DC\_7A\_n77(2A)

DC\_7C\_n77A

DC\_7C\_n77(2A)

DC\_7A-7A\_n77(2A)

DC\_7A\_n78C

DC\_12A\_n66(2A)

DC\_18A\_n77(2A)

DC\_18A\_n78(2A)

(This paper is intended to skip a TP since there is no new technical study needed)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2014172 DC\_XXA\_71A\_n71A REFSENS relaxation**

*Type: other For: Approval  
 38.101-3 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016661**.

**R4-2016661 DC\_XXA\_71A\_n71A REFSENS relaxation**

*Type: other For: Approval  
 38.101-3 v..  
 Source: Qualcomm Incorporated*

(Replaces R4-2014172)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

**R4-2014810 TP to TR 37.717-11-11: DC\_18A\_n41A**

*Type: pCR For: Approval  
 37.717-11-11 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016663**.

**R4-2016663 TP to TR 37.717-11-11: DC\_18A\_n41A**

*Type: pCR For: Approval  
 37.717-11-11 v0.1.0  
 Source: KDDI Corporation*

(Replaces R4-2014810)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014850 TP for TR 38.717-11-11: DC\_48\_n77**

*Type: discussion For: Approval  
 Source: Verizon Denmark*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **withdrawn**.

**R4-2015071 draftCR for DC\_1A-1A\_n28A and DC\_1A-1A\_n78A**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction of DC\_1A-1A\_n28A and DC\_1A-1A\_n78A

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2015221 TP for 37.717-11-11 to introduce DC\_7\_n2A**

*Type: pCR For: Approval  
 37.717-11-11 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016667**.

**R4-2016667 TP for 37.717-11-11 to introduce DC\_7\_n2A**

*Type: pCR For: Approval  
 37.717-11-11 v0.1.0  
 Source: Nokia*

(Replaces R4-2015221)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015245 TP for 37.717-11-11 to introduce DC\_71A\_n71A**

*Type: pCR For: Approval  
 37.717-11-11 v0.1.0  
 Source: Nokia, T-Mobile*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016670**.

**R4-2016670 TP for 37.717-11-11 to introduce DC\_71A\_n71A**

*Type: pCR For: Approval  
 37.717-11-11 v0.1.0  
 Source: Nokia, T-Mobile*

(Replaces R4-2015245)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015403 TP for TR 37.717-11-11: DC\_12\_n71**

*Type: pCR For: Approval  
 37.717-11-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

**R4-2016676 TP for TR 37.717-11-11: DC\_12\_n71**

*Type: pCR For: Approval  
 37.717-11-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **withdrawn**.

**R4-2015928 CR to add configurations for 1\_n40 and 3\_n40**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Ericsson*

**Abstract:**

Adding configurations for 1\_n40 and 3\_n40

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2016304 CR to add DC\_1\_n258 configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Ericsson, Telstra*

**Abstract:**

Adding DC\_1\_n258 configurations

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2016309 CR to add CA\_n7B UL configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Ericsson, Telstra*

**Abstract:**

Adding CA\_n7B UL configurations

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **not pursued**.

#### 10.3.3 EN-DC with FR2 band [DC\_R17\_1BLTE\_1BNR\_2DL2UL-Core]

**R4-2014607 Draft CR for TS 38.101-3: Support of Uplink n257D/G/H/I for DC\_8\_n257 and DC\_11\_n257**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: SoftBank Corp.*

**Abstract:**

DC combos of 8\_n257 and 11\_n257 are updated to add UL n257D/G/H/I.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2014844 DraftCR to 38.101-3: Introduce configurations for inter-band EN-DC including FR2**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Verizon Denmark*

**Abstract:**

Some uplink configuratoins are missing from the privious approved proposals, inlcuding configuraitons,

DC\_2A\_n260I

DC\_5A\_n260I

DC\_13A\_n260I

DC\_48A\_n260G

DC\_48A\_n260H

DC\_48A\_n260I

DC\_66A\_n260I

In addition, following two downlink configurations are missing,

DC\_48A\_n261(A-G-H)

DC\_48A\_n261(A-G-I)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2014877 TP for TR 37.717-11-11 for DC\_2\_n261**

*Type: discussion For: Approval  
 Source: Verizon Denmark*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015132 Draft CR for 38.101-3 to add UL EN-DC configurations for DC\_5\_n257, DC\_7\_n257 and DC\_7-7\_n257**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: SK Telecom, Samsung, Ericsson, Nokia, LGE*

**Abstract:**

DC combos of 5\_n257, 7\_n257, and 7-7\_n257 are updated to add UL CA.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2015220 draftCR to introduce DC\_8A\_n258 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

### 10.4 DC of 2 LTE band and 1 NR band [DC\_R17\_2BLTE\_1BNR\_3DL2UL]

**R4-2014056 TP for TR 37.717-21-11: DC\_7-32\_n78**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-21-11 to update the reference sensitivity exceptions for DC\_7-32\_n78. Test points are proposed for B32 to account for the IMD3 and IMD4 impact of a DC\_7\_n78 UL configuration.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014057 TP for TR 37.717-21-11: DC\_7-32\_n1**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-21-11 to include DC\_7-32\_n1.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014058 TP for TR 37.717-21-11: DC\_20-32\_n1**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-21-11 to include DC\_20-32\_n1.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

#### 10.4.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_2BLTE\_1BNR\_3DL2UL-Core/Perf]

**R4-2015704 TR 37.717-21-11 V0.2.0 for DC of 2 LTE band and 1 NR band**

*Type: draft TR For: Agreement  
 37.717-21-11 v0.2.0  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015705 Revised WID: Dual Connectivity (DC) of 2 bands LTE inter-band CA (2DL/1UL) and 1 NR band (1DL/1UL)**

*Type: WID revised For: Endorsement  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2015706 CR on introduction of completed EN-DC of 2 bands LTE and 1 band NR from RAN4#96e and RAN4#97e into TS 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0395 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.4.2 EN-DC without FR2 band [DC\_R17\_2BLTE\_1BNR\_3DL2UL-Core]

**R4-2014031 TP for 37.717-21-11 for DC\_2-66\_n7**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014032 TP for 37.717-21-11 for DC\_2-5\_n7**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014033 TP for 37.717-21-11 for DC\_2-8\_n2**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014034 TP for 37.717-21-11 for DC\_5-66\_n7**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014035 TP for 37.717-21-11 for DC\_20-32\_n1**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016656**.

**R4-2016656 TP for 37.717-21-11 for DC\_20-32\_n1**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Huawei,HiSilicon*

(Replaces R4-2014035)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014036 TP for 37.717-21-11 for DC\_20-32\_n3**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014103 TP for TR 37.717-21-11 DC\_1-3\_n3**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014104 TP for TR 37.717-21-11 DC\_1-41\_n3**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014105 TP for TR 37.717-21-11 DC\_3-18\_n3**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014106 TP for TR 37.717-21-11 DC\_3-41\_n3**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014128 TP for TR 37.717-21-11 DC\_5A-7A\_n66A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, TELUS, Bell mobility*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014129 TP for TR 37.717-21-11 DC\_7-66\_n77**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, TELUS, Bell mobility*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014132 TP for TR 37.717-21-11 DC\_2-5\_n48**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, Verizon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014133 TP for TR 37.717-21-11 DC\_2-13\_n48**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, Verizon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014135 TP for TR 37.717-21-11 DC\_2-48\_n5**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, Verizon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014136 TP for TR 37.717-21-11 DC\_5-46\_n66**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, Verizon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014137 TP for TR 37.717-21-11 DC\_5-66\_n48**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, Verizon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014138 TP for TR 37.717-21-11 DC\_5-66\_n77**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, Verizon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014139 TP for TR 37.717-21-11 DC\_13-48\_n77**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, Verizon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

**R4-2016659 TP for TR 37.717-21-11 DC\_13-48\_n77**

*Type: pCR For: Approval  
 Source: Samsung, Verizon*

**Decision:** The document was **withdrawn**.

**R4-2014144 Draft CR for 38.101-3 to introduce new inter-band EN-DC (2LTE band+1NR band) within FR1**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Samsung, SK Telecom, KT, KDDI, Verizon*

**Abstract:**

Adding following new inter-band EN-DC configurations within FR1 cause their fallback mode have existed in current Spec

DC\_1A-3C\_n77A

DC\_1A-3C\_n77(2A)

DC\_1A-5A\_n78C

DC\_1A-7A\_n78C

DC\_1A-7A-7A\_n78C

DC\_1A-18A\_n77(2A)

DC\_1A-18A\_n78(2A)

DC\_1A-41C\_n77A

DC\_1A-41C\_n78A

DC\_2A-2A-5A\_n66A

DC\_2A-66B\_n5A

DC\_2A-66B\_n66A

DC\_3A-5A\_n78C

DC\_3A-7A\_n78C

DC\_3A-7A-7A\_n78C

DC\_3C-8A\_n77A

DC\_3C-8A\_n77(2A)

DC\_3A-18A\_n77(2A)

DC\_3A-18A\_n78(2A)

DC\_5A-7A\_n78C

DC\_5A-7A-7A\_n78C

DC\_13A-66B\_n66A

(This paper is intended to skip a TP since there is no new technical study needed)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2014612 TP for TR 37.717-21-11: EN-DC\_1-42\_n3**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014613 TP for TR 37.717-21-11: EN-DC\_8-42\_n3**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014614 TP update for TR 37.717-21-11: EN-DC\_1-11\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: SoftBank Corp., LG Electronics*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016662**.

**R4-2016662 TP update for TR 37.717-21-11: EN-DC\_1-11\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: SoftBank Corp., LG Electronics*

(Replaces R4-2014614)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014811 TP for DC\_3-18\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014831 Draft CR to 38.101-3: Error correction of EN-DC configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Verizon Denmark*

**Abstract:**

The LTE\_48B is not defined, and it is incorrectly applied in the following confirgurations,

DC\_13A-48B\_n2A

DC\_13A-48B\_n66A

DC\_48B-66A\_n5A

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2014852 TP for TR 37.717-21-11: CA\_2-66\_n77**

*Type: discussion For: Approval  
 Source: Verizon Denmark*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014854 TP for TR 37.717-21-11: CA\_2-48\_n77**

*Type: discussion For: Approval  
 Source: Verizon Denmark*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014856 TP for TR 37.717-21-11: CA\_2-13\_n77**

*Type: discussion For: Approval  
 Source: Verizon Denmark*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014857 TP for TR 37.717-21-11: CA\_2-5\_n77**

*Type: discussion For: Approval  
 Source: Verizon Denmark*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014858 TP for TR 37.717-21-11: CA\_5-13\_n66**

*Type: discussion For: Approval  
 Source: Verizon Denmark*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014860 TP for TR 37.717-21-11: CA\_13-66\_n77**

*Type: discussion For: Approval  
 Source: Verizon Denmark*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014862 TP for TR 37.717-21-11: CA\_13-66\_n5**

*Type: discussion For: Approval  
 Source: Verizon Denmark*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014864 TP for TR 37.717-21-11: CA\_48-66\_n77**

*Type: discussion For: Approval  
 Source: Verizon Denmark*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **withdrawn**.

**R4-2014952 TP for DC\_1-18\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016664**.

**R4-2016664 TP for DC\_1-18\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: KDDI Corporation*

(Replaces R4-2014952)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014953 TP for DC\_1-18\_n41**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016665**.

**R4-2016665 TP for DC\_1-18\_n41**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: KDDI Corporation*

(Replaces R4-2014953)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014982 TP for DC\_3-42\_n1 for TR 37.717-21-11**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015072 draftCR for DC\_1A-1A-3A\_n28A, DC\_1A-1A-3C\_n28A, DC\_1A-1A-3A\_n78A, DC\_1A-1A-3C\_n78A, DC\_1A-1A-5A\_n78A, DC\_1A-1A-7A\_n28A, DC\_1A-1A-28A\_n78A, and DC\_3C-5A\_n78A**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction of DC\_1A-1A-3A\_n28A, DC\_1A-1A-3C\_n28A, DC\_1A-1A-3A\_n78A, DC\_1A-1A-3C\_n78A, DC\_1A-1A-5A\_n78A, DC\_1A-1A-7A\_n28A, DC\_1A-1A-28A\_n78A, and DC\_3C-5A\_n78A

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2015225 TP for 37.717-21-11 to introduce DC\_5A-7A\_n7A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016668**.

**R4-2016668 TP for 37.717-21-11 to introduce DC\_5A-7A\_n7A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Nokia*

(Replaces R4-2015225)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015226 TP for 37.717-21-11 to introduce DC\_2A-28A\_n7A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Nokia, ZTE*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015227 TP for 37.717-21-11 to introduce DC\_28A-66A\_n7A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Nokia, ZTE*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016669**.

**R4-2016669 TP for 37.717-21-11 to introduce DC\_28A-66A\_n7A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Nokia, ZTE*

(Replaces R4-2015227)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015228 TP for 37.717-21-11 to introduce DC\_7A-28A\_n2A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Nokia, ZTE*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015229 TP for 37.717-21-11 to introduce DC\_2A-7A\_n7A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015246 TP for 37.717-21-11 to introduce DC\_2A-71A\_n71A and DC\_66A-71A\_n71A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Nokia, T-Mobile*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2016671 TP for 37.717-21-11 to introduce DC\_2A-71A\_n71A and DC\_66A-71A\_n71A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Nokia, T-Mobile*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **withdrawn**.

**R4-2015268 TP to TR 37.717-21-11 DC\_1A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Huawei, HiSilicon, Ericsson*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015269 TP to TR 37.717-21-11 DC\_3A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Huawei, HiSilicon, Ericsson*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015270 TP to TR 37.717-21-11 DC\_7A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Huawei, HiSilicon, Ericsson*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015271 TP to TR 37.717-21-11 DC\_8A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015404 TP for TR 37.717-21-11: DC\_7A-66A\_n7A/DC\_7A-66A-66A\_n7A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015710 TP for TR 37.717-21-11: DC\_2-7\_n77**

*Type: pCR For: Approval  
 37.717-21-11 v0.2.0  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015711 TP for TR 37.717-21-11: DC\_7-66\_n77**

*Type: pCR For: Approval  
 37.717-21-11 v0.2.0  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2016678 TP for TR 37.717-21-11: DC\_7-66\_n77**

*Type: pCR For: Approval  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Decision:** The document was **withdrawn**.

**R4-2015929 TP for TR 37.717-21-11 to include DC\_1A-40A\_n78A, DC\_1A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-21-11 to include DC\_1A-40A\_n78A, DC\_1A-40C\_n78A

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

**R4-2015930 TP for TR 37.717-21-11 to include DC\_3A-40A\_n78A, DC\_3A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-21-11 to include DC\_3A-40A\_n78A, DC\_3A-40C\_n78A

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

**R4-2015931 TP for TR 37.717-21-11 to include DC\_7A-40A\_n78A, DC\_7A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-21-11 to include DC\_7A-40A\_n78A, DC\_7A-40C\_n78A

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

**R4-2016310 CR to add CA\_n7B UL configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Ericsson, Telstra*

**Abstract:**

Adding CA\_n7B UL configurations

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **not pursued**.

#### 10.4.3 DMEN-DC with FR2 band [DC\_R17\_2BLTE\_1BNR\_3DL2UL-Core]

**R4-2014134 TP for TR 37.717-21-11 DC\_2-46\_n261**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, Verizon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014140 TP for TR 37.717-21-11 DC\_13-46\_n261**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, Verizon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016660**.

**R4-2016660 TP for TR 37.717-21-11 DC\_13-46\_n261**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Samsung, Verizon*

(Replaces R4-2014140)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014143 Draft CR for 38.101-3 to introduce new inter-band EN-DC (2LTE band+1NR band) including FR2**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Samsung, Verizon*

**Abstract:**

Adding following new inter-band EN-DC configurations including FR2 cause their fallback mode have existed in current Spec

DC\_2-5\_n260

DC\_2-5\_n261

DC\_2-13\_n260

DC\_2-2-13\_n261

DC\_2-13\_n261

DC\_2-46\_n261

DC\_2-46-46\_n261

DC\_2-46-46-46\_n261

DC\_2-66\_n260

DC\_2-66-66\_n260

DC\_2-2-66\_n261

DC\_2-66\_n261

DC\_2-66-66\_n261

DC\_5-66\_n260

DC\_5-66-66\_n260

DC\_5-66\_n261

DC\_5-66-66\_n261

DC\_13-66\_n260

DC\_13-66-66\_n260

DC\_13-66\_n261

DC\_13-66-66\_n261

DC\_46-66\_n261

DC\_46-46-66\_n261

DC\_46-46-46-66\_n261

(This paper is intended to skip a TP since there is no new technical study needed)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2014609 Draft CR for TS 38.101-3: Support of Uplink n257D/G/H/I for DC\_1-8\_n257, DC\_1-11\_n257, DC\_3-8\_n257 and DC\_8-11\_n257**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: SoftBank Corp.*

**Abstract:**

DC combos of 1-8\_n257, 1-11\_n257, 3-8\_n257 and 8-11\_n257 are updated to add UL n257D/G/H/I.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2015133 Draft CR for 38.101-3 to add UL EN-DC configurations including FR2 with 3DL and 2UL**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: SK Telecom, Samsung, Ericsson, Nokia, LGE*

**Abstract:**

DC combos supporting UL CA are updated.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2015222 draftCR to introduce DC\_3A-8A\_n258 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2015223 draftCR to introduce DC\_7A-8A\_n258 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2015224 draftCR to introduce DC\_3A-7A\_n258 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

### 10.5 DC of 3 LTE band and 1 NR band [DC\_R17\_3BLTE\_1BNR\_4DL2UL]

**R4-2014059 TP for TR 37.717-31-11: DC\_1-7-32\_n78**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to update the reference sensitivity exceptions for DC\_1-7-32\_n78.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014060 TP for TR 37.717-31-11: DC\_1-20-32\_n28**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to update the reference sensitivity exceptions for DC\_1-20-32\_n28.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014061 TP for TR 37.717-31-11: DC\_1-20-32\_n78**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to update the reference sensitivity exceptions for DC\_1-20-32\_n78.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014062 TP for TR 37.717-31-11: DC\_3-7-32\_n78**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to update the reference sensitivity exceptions for DC\_3-7-32\_n78.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014063 TP for TR 37.717-31-11: DC\_3-20-32\_n78**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to update the reference sensitivity exceptions for DC\_3-20-32\_n78.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014064 TP for TR 37.717-31-11: DC\_7-20-32\_n1**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to update the reference sensitivity exceptions for DC\_7-20-32\_n1.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

#### 10.5.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_3BLTE\_1BNR\_4DL2UL-Core/Perf]

**R4-2015917 Revised WID LTE 3DL and one NR band Rel-17**

*Type: WID revised For: Endorsement  
 Source: Ericsson*

**Abstract:**

Revised WID LTE 3DL and one NR band Rel-17

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2015921 CR introduction completed band combinations LTE 3DL and one NR band -**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0400 Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR introduction completed band combinations LTE 3DL and one NR band -> 38.101-3

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015925 TR 37.717-31-11 v0.2.0 Rel-17 DC combinations LTE 3DL and one NR band**

*Type: draft TR For: Agreement  
 37.717-31-11 v0.1.0  
 Source: Ericsson*

**Abstract:**

TR 37.717-31-11 v0.2.0 Rel-17 DC combinations LTE 3DL and one NR band

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.5.2 EN-DC without FR2 band [DC\_R17\_3BLTE\_1BNR\_4DL2UL-Core]

**R4-2014037 TP for 37.717-31-11 for DC\_1-20-32\_n3**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014038 TP for 37.717-31-11 for DC\_2-4-7\_n28**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014039 TP for 37.717-31-11 for DC\_2-5-7\_n66**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014040 TP for 37.717-31-11 for DC\_2-5-66\_n7**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014041 TP for 37.717-31-11 for DC\_2-5-66\_n66**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014042 TP for 37.717-31-11 for DC\_2-7-66\_n28**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014043 TP for 37.717-31-11 for DC\_3-20-32\_n1**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014107 TP for TR 37.717-31-11 DC\_1-3-18\_n3**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014108 TP for TR 37.717-31-11 DC\_1-3-41\_n3**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014109 TP for TR 37.717-31-11 DC\_1-3-41\_n41**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014130 TP for TR 37.717-31-11 DC\_2-5-7\_n66**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Samsung, TELUS, Bell mobility*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014145 Draft CR for 38.101-3 to introduce new inter-band EN-DC (3LTE band+1NR band) within FR1**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Samsung, SK Telecom, KT, KDDI*

**Abstract:**

Adding following new inter-band EN-DC configurations within FR1 cause their fallback mode have existed in current Spec

DC\_1A-3C-8A\_n77A

DC\_1A-3C-8A\_n77(2A)

DC\_1A-3A-18A\_n77(2A)

DC\_1A-3A-18A\_n78(2A)

DC\_1A-3A-41C\_n77A

DC\_1A-3A-41C\_n78A

DC\_1A-3A-5A\_n78C

DC\_1A-3A-7A\_n78C

DC\_1A-3A-7A-7A\_n78C

DC\_1A-5A-7A\_n78C

DC\_1A-5A-7A-7A\_n78C

DC\_3A-5A-7A\_n78C

DC\_3A-5A-7A-7A\_n78C

(This paper is intended to skip a TP since there is no new technical study needed)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2014615 TP for TR 37.717-31-11: EN-DC\_1-3-11\_n28**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014616 TP for TR 37.717-31-11: EN-DC\_1-3-11\_n77**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014617 TP for TR 37.717-31-11: EN-DC\_3-8-11\_n28**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014618 TP for TR 37.717-31-11: EN-DC\_3-8-11\_n77**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014619 TP for TR 37.717-31-11: EN-DC\_1-8-11\_n28**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014807 TP for TR 37.717-31-11: DC\_1A-3A-18A\_n28A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014845 TP for TR 37.717-31-11: DC\_1A-3A-18A\_n41A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015073 draftCR for DC\_1A-3C-5A\_n78A, DC\_1A-1A-3A-5A\_n78A, DC\_1A-1A-3C-5A\_n78A, DC\_1A-1A-3A-7A\_n78A, DC\_1A-1A-3C-7A\_n78A, DC\_1A-1A-3C-7A\_n28A, DC\_1A-1A-3A-28A\_n78A, DC\_1A-1A-3C-28A\_n78A and DC\_3C-5A-7A\_n78A**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction of DC\_1A-3C-5A\_n78A, DC\_1A-1A-3A-5A\_n78A, DC\_1A-1A-3C-5A\_n78A, DC\_1A-1A-3A-7A\_n78A, DC\_1A-1A-3C-7A\_n78A, DC\_1A-1A-3C-7A\_n28A, DC\_1A-1A-3A-28A\_n78A, DC\_1A-1A-3C-28A\_n78A and DC\_3C-5A-7A\_n78A

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2015231 TP for 37.717-31-11 to introduce DC\_2A-7A-28A\_n7A**

*Type: pCR For: Approval  
 37.717-21-11 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015247 TP for 37.717-31-11 to introduce DC\_2A-66A-71A\_n71A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Nokia, T-Mobile*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015248 TP for 37.717-31-11 to introduce DC\_2-5-66\_n77A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Nokia, Verizon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015249 TP for 37.717-31-11 to introduce DC\_2-13-66\_n77A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Nokia, Verizon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015250 TP for 37.717-31-11 to introduce DC\_2-48-66\_n77A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Nokia, Verizon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015272 TP to TR 37.717-31-11 DC\_1A-3A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon, Nokia, Ericsson*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015273 TP to TR 37.717-31-11 DC\_1A-7A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon, Ericsson*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015274 TP to TR 37.717-31-11 DC\_1A-8A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon, Nokia*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015275 TP to TR 37.717-31-11 DC\_3A-7A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon, Ericsson*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015276 TP to TR 37.717-31-11 DC\_3A-8A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon, Nokia*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015277 TP to TR 37.717-31-11 DC\_7A-8A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015405 TP for TR 37.717-31-11: DC\_1A-7A-8A\_n28A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015406 TP for TR 37.717-31-11: DC\_3A-7A-8A\_n28A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015407 TP for TR 37.717-31-11: DC\_1A-7A-28A\_n3A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015408 TP for TR 37.717-31-11: DC\_3A-8A-40A\_n1A/DC\_3A-8A-40C\_n1A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015409 TP for TR 37.717-31-11: DC\_7A-8A-40A\_n1A/DC\_7A-8A-40C\_n1A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015410 DraftCR for 38.101-3 to add configuration DC\_3A-7A-40C\_n1A**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add ENDC configuration DC\_3A-7A-40C\_n1A.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2015411 TP for TR 37.717-31-11: DC\_2A-28A-66A\_n7A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015412 TP for TR 37.717-31-11: DC\_2A-5A-7A\_n7A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015413 TP for TR 37.717-31-11: DC\_2A-7A-66A\_n7A/DC\_2A-7A-66A-66A\_n7A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015414 TP for TR 37.717-31-11: DC\_5A-7A-66A\_n7A/DC\_5A-7A-66A-66A\_n7A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015415 TP for TR 37.717-31-11: DC\_7A-28A-66A\_n7A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015712 TP for TR 37.717-31-11: DC\_2-7-66\_n77**

*Type: pCR For: Approval  
 37.717-31-11 v0.2.0  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015932 TP for TR 37.717-31-11 to include DC\_1A-3A-40A\_n78A, DC\_1A-3A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-31-11 to include DC\_1A-3A-40A\_n78A, DC\_1A-3A-40C\_n78A

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

**R4-2015933 TP for TR 37.717-31-11 to include DC\_1A-7A-40A\_n78A, DC\_1A-7A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-31-11 to include DC\_1A-7A-40A\_n78A, DC\_1A-7A-40C\_n78A

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

**R4-2015934 TP for TR 37.717-31-11 to include DC\_3A-7A-40A\_n78A, DC\_3A-7A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-31-11 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-31-11 to include DC\_3A-7A-40A\_n78A, DC\_3A-7A-40C\_n78A

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

**R4-2015944 draft CR 38.101-3 to add DC\_2A-2A-5A-66A\_n66A**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Ericsson, Bell*

**Abstract:**

Adding configuration to existing DC combination

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2016311 CR to add CA\_n7B UL configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Ericsson, Telstra*

**Abstract:**

Adding CA\_n7B UL configurations

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **not pursued**.

#### 10.5.3 EN-DC with FR2 band [DC\_R17\_3BLTE\_1BNR\_4DL2UL-Core]

**R4-2014611 Draft CR for TS 38.101-3: Support of Uplink n257D/G/H/I for DC\_1-3-8\_n257 and DC\_1A-8-11\_n257**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: SoftBank Corp.*

**Abstract:**

DC combos of 1-3-8\_n257 and 1-8-11\_n257 are updated to add UL n257D/G/H/I.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2015134 Draft CR for 38.101-3 to add EN-DC configurations including FR2 with 4DL and 2UL**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: SK Telecom, Samsung, Ericsson, Nokia, LGE*

**Abstract:**

DC combos supporting UL CA and DL CA are updated.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2015230 draftCR to introduce DC\_3A-7A-8A\_n258 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

### 10.6 DC of 4 LTE band and 1 NR band [DC\_R17\_4BLTE\_1BNR\_5DL2UL]

#### 10.6.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_4BLTE\_1BNR\_5DL2UL-Core/Perf]

**R4-2015214 Revised Rel-17 WID on DC of 4 bands LTE inter-band CA (4DL1UL) and 1 NR band (1DL1UL)**

*Type: WID revised For: Endorsement  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Inclusion of requests provided at RAN4#97

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2015215 CR to introduce new combinations of LTE 4band + NR 1band for TS 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0387 Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Inclusion of approved combinations provided at RAN4#97

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015216 draftTR 37.717-41-11 v0.2.0**

*Type: draft TR For: Agreement  
 37.717-41-11 v0.2.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Inclusion of TPs provided at RAN4#97

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.6.2 EN-DC without FR2 band [DC\_R17\_4BLTE\_1BNR\_5DL2UL-Core]

**R4-2014044 TP for 37.717-41-11 for DC\_2-5-7-66\_n66**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei,HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016657**.

**R4-2016657 TP for 37.717-41-11 for DC\_2-5-7-66\_n66**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei,HiSilicon*

(Replaces R4-2014044)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2014146 Draft CR for 38.101-3 to introduce new inter-band EN-DC (4LTE band+1NR band) within FR1**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Samsung, SK Telecom*

**Abstract:**

Adding following new inter-band EN-DC configurations within FR1 cause their fallback mode have existed in current Spec

DC\_1A-3A-5A-7A\_n78C

DC\_1A-3A-5A-7A-7A\_n78C

(This paper is intended to skip a TP since there is no new technical study needed)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2015074 draft CR for DC\_1A-1A-3A-5A-7A\_n78A, DC\_1A-3C-5A-7A\_n78A, and DC\_1A-1A-3A-7A-28A\_n78A**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction of DC\_1A-1A-3A-5A-7A\_n78A, DC\_1A-3C-5A-7A\_n78A, and DC\_1A-1A-3A-7A-28A\_n78A

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

**R4-2015278 TP to TR 37.717-41-11 DC\_1A-3A-7A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016672**.

**R4-2016672 TP to TR 37.717-41-11 DC\_1A-3A-7A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015278)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015279 TP to TR 37.717-41-11 DC\_1A-3A-8A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei, HiSilicon, Nokia*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016673**.

**R4-2016673 TP to TR 37.717-41-11 DC\_1A-3A-8A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei, HiSilicon, Nokia*

(Replaces R4-2015279)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015280 TP to TR 37.717-41-11 DC\_1A-7A-8A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016674**.

**R4-2016674 TP to TR 37.717-41-11 DC\_1A-7A-8A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015280)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015281 TP to TR 37.717-41-11 DC\_3A-7A-8A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016675**.

**R4-2016675 TP to TR 37.717-41-11 DC\_3A-7A-8A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015281)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015416 TP for TR 37.717-41-11: DC\_2A-7A-28A-66A\_n7A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015417 TP for TR 37.717-41-11:DC\_2A-5A-7A-66A\_n7A/DC\_2A-5A-7A-66A-66A\_n7A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015418 TP for TR 37.717-41-11:DC\_1A-3A-7A-8A\_n28A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015419 TP for TR 37.717-41-11:DC\_3A-7A-8A-40A\_n1A/DC\_3A-7A-8A-40C\_n1A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **revised to R4-2016677**.

**R4-2016677 TP for TR 37.717-41-11:DC\_3A-7A-8A-40A\_n1A/DC\_3A-7A-8A-40C\_n1A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015419)

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

**R4-2015935 TP for TR 37.717-41-11 to include DC\_1A-3A-7A-40A\_n78A, DC\_1A-3A-7A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-41-11 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-41-11 to include DC\_1A-3A-7A-40A\_n78A, DC\_1A-3A-7A-40C\_n78A

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **noted**.

#### 10.6.3 EN-DC with FR2 band [DC\_R17\_4BLTE\_1BNR\_5DL2UL-Core]

**R4-2015135 Draft CR for 38.101-3 to add UL EN-DC configurations including FR2 with 5DL and 2UL**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: SK Telecom, Samsung, Ericsson, Nokia, LGE*

**Abstract:**

DC combos supporting UL CA are updated.

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **endorsed**.

### 10.7 DC of x bands (x=1,2, 3, 4) LTE inter-band CA and 2 bands NR inter-band CA [DC\_R17\_xBLTE\_2BNR\_yDL2UL]

#### 10.7.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_xBLTE\_2BNR\_yDL2UL-Core/Per]

**R4-2014304 TR 37.717-11-21 v0.2.0 TR update: LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17**

*Type: draft TR For: Agreement  
 37.717-11-21 v0.2.0  
 Source: LG Electronics Polska*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2014305 Revised WID on LTE (xDL/UL x=1.2,3,4) with NR 2 bands (2DL/1UL) EN DC in Rel-17**

*Type: WID revised For: (not specified)  
 Source: LG Electronics Polska*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2014306 Introducing CR on new EN-DC LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0359 Cat: B (Rel-17)  
  
 Source: LG Electronics Polska*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.7.2 EN-DC including NR inter CA without FR2 band [DC\_R17\_xBLTE\_2BNR\_yDL2UL-Core]

**R4-2014071 TP for TR 37.717-11-21 DC\_1\_n3-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014072 TP for TR 37.717-11-21 DC\_1\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014073 TP for TR 37.717-11-21 DC\_1\_n41-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014074 TP for TR 37.717-11-21 DC\_1-3\_n3-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016694**.

**R4-2016694 TP for TR 37.717-11-21 DC\_1-3\_n3-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014074)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014075 TP for TR 37.717-11-21 DC\_1-3\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016695**.

**R4-2016695 TP for TR 37.717-11-21 DC\_1-3\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014075)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014076 TP for TR 37.717-11-21 DC\_1-3\_n3-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016696**.

**R4-2016696 TP for TR 37.717-11-21 DC\_1-3\_n3-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014076)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014077 TP for TR 37.717-11-21 DC\_1-3\_n41-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014078 TP for TR 37.717-11-21 DC\_1-3-18\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016697**.

**R4-2016697 TP for TR 37.717-11-21 DC\_1-3-18\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014078)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014079 TP for TR 37.717-11-21 DC\_1-3-18\_n3-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014080 TP for TR 37.717-11-21 DC\_1-3-41\_n3-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016698**.

**R4-2016698 TP for TR 37.717-11-21 DC\_1-3-41\_n3-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014080)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014081 TP for TR 37.717-11-21 DC\_1-3-41\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016699**.

**R4-2016699 TP for TR 37.717-11-21 DC\_1-3-41\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014081)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014082 TP for TR 37.717-11-21 DC\_1-3-41\_n3-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016700**.

**R4-2016700 TP for TR 37.717-11-21 DC\_1-3-41\_n3-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014082)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014083 TP for TR 37.717-11-21 DC\_1-3-41\_n41-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016701 TP for TR 37.717-11-21 DC\_1-3-41\_n41-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014084 TP for TR 37.717-11-21 DC\_1-3-41\_n41-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016702 TP for TR 37.717-11-21 DC\_1-3-41\_n41-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014085 TP for TR 37.717-11-21 DC\_1-18\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014086 TP for TR 37.717-11-21 DC\_1-41\_n3-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016703 TP for TR 37.717-11-21 DC\_1-41\_n3-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014087 TP for TR 37.717-11-21 DC\_1-41\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014088 TP for TR 37.717-11-21 DC\_1-41\_n3-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014089 TP for TR 37.717-11-21 DC\_1-41\_n41-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016704 TP for TR 37.717-11-21 DC\_1-41\_n41-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014090 TP for TR 37.717-11-21 DC\_1-41\_n41-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016705 TP for TR 37.717-11-21 DC\_1-41\_n41-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014091 TP for TR 37.717-11-21 DC\_3\_n3-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016706**.

**R4-2016706 TP for TR 37.717-11-21 DC\_3\_n3-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014091)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014092 TP for TR 37.717-11-21 DC\_3\_n41-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014093 TP for TR 37.717-11-21 DC\_3-18\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016707**.

**R4-2016707 TP for TR 37.717-11-21 DC\_3-18\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014093)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014094 TP for TR 37.717-11-21 DC\_3-18\_n3-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014095 TP for TR 37.717-11-21 DC\_3-41\_n3-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016708**.

**R4-2016708 TP for TR 37.717-11-21 DC\_3-41\_n3-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014095)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014096 TP for TR 37.717-11-21 DC\_3-41\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016709**.

**R4-2016709 TP for TR 37.717-11-21 DC\_3-41\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014096)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014097 TP for TR 37.717-11-21 DC\_3-41\_n3-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016710**.

**R4-2016710 TP for TR 37.717-11-21 DC\_3-41\_n3-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014097)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014098 TP for TR 37.717-11-21 DC\_3-41\_n41-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016711 TP for TR 37.717-11-21 DC\_3-41\_n41-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014099 TP for TR 37.717-11-21 DC\_3-41\_n41-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016712 TP for TR 37.717-11-21 DC\_3-41\_n41-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014100 TP for TR 37.717-11-21 DC\_41\_n3-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016713 TP for TR 37.717-11-21 DC\_41\_n3-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014101 TP for TR 37.717-11-21 DC\_41\_n41-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016714**.

**R4-2016714 TP for TR 37.717-11-21 DC\_41\_n41-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014101)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014102 TP for TR 37.717-11-21 DC\_41\_n41-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016715**.

**R4-2016715 TP for TR 37.717-11-21 DC\_41\_n41-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014102)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014121 TP for TR 37.717-11-21 DC\_2\_n7-n66**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, TELUS, Bell mobility*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014122 TP for TR 37.717-11-21 DC\_2\_n38-n66**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, TELUS, Bell mobility*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014123 TP for TR 37.717-11-21 DC\_2\_n66-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, TELUS, Bell mobility*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014124 TP for TR 37.717-11-21 DC\_2-7\_n38-n66**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, TELUS, Bell mobility*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014125 TP for TR 37.717-11-21 DC\_7-66\_n38-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, TELUS, Bell mobility*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014126 TP for TR 37.717-11-21 DC\_12\_n7-n66**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, TELUS, Bell mobility*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014127 TP for TR 37.717-11-21 DC\_66\_n38-n66**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, TELUS, Bell mobility*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016716**.

**R4-2016716 TP for TR 37.717-11-21 DC\_66\_n38-n66**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Samsung, TELUS, Bell mobility*

(Replaces R4-2014127)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014187 Discussion of MSD for 3DL2UL DC\_42\_n1-n79 and DC\_19\_n1-n77 due to UL IMD issues**

*Type: discussion For: Approval  
 38.717-03-02 v..  
 Source: MediaTek Inc.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **noted**.

**R4-2014315 TP on summary of self-interference analysis for new EN-DC LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17**

*Type: pCR For: Approval  
 37.717-11-21 v0.2.0  
 Source: LG Electronics France*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014316 MSD anlaysis results for new DC band combinations**

*Type: pCR For: Approval  
 37.717-11-21 v0.2.0  
 Source: LG Electronics France*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014608 TP for DC\_19\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC., MediaTek Inc.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016717**.

**R4-2016717 TP for DC\_19\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC., MediaTek Inc.*

(Replaces R4-2014608)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014610 TP for DC\_19\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC., MediaTek Inc.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016718**.

**R4-2016718 TP for DC\_19\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC., MediaTek Inc.*

(Replaces R4-2014610)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014647 TP for TR 37.717-11-21: EN-DC\_11\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016719**.

**R4-2016719 TP for TR 37.717-11-21: EN-DC\_11\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: SoftBank Corp.*

(Replaces R4-2014647)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014648 TP for TR 37.717-11-21: EN-DC\_11\_n28-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014650 TP for TR 37.717-11-21: EN-DC\_42\_n3-n28**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014651 TP for TR 37.717-11-21: EN-DC\_42\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014653 TP for TR 37.717-11-21: EN-DC\_1-8\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014667 TP for TR 37.717-11-21: EN-DC\_1-11\_n3-n28**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014681 TP for TR 37.717-11-21: EN-DC\_8-11\_n3-n28**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014689 TP for TR 37.717-11-21: EN-DC\_1-8-42\_n28-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014808 TP for TR 37.717-11-21: EN-DC\_1-3-18\_n28-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014809 TP for TR 37.717-11-21: EN-DC\_1-3-18\_n28-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014812 TP for TR 37.717-11-21: DC\_41A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016720**.

**R4-2016720 TP for TR 37.717-11-21: DC\_41A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

(Replaces R4-2014812)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014825 TP for TR 37.717-11-21: DC\_1A-18A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014828 TP for TR 37.717-11-21: DC\_1A-18A\_n28A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014830 TP for TR 37.717-11-21: DC\_1A-18A\_n28A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014833 TP for TR 37.717-11-21: DC\_1A-18A\_n3A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014840 TP for TR 37.717-11-21: DC\_1A-18A\_n41A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014841 TP for TR 37.717-11-21: DC\_1A-18A\_n41A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014851 TP for TR 37.717-11-21: EN-DC\_1-3-41\_n28-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016721**.

**R4-2016721 TP for TR 37.717-11-21: EN-DC\_1-3-41\_n28-n41**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

(Replaces R4-2014851)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014853 TP for TR 37.717-11-21: DC\_1A-41A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016722**.

**R4-2016722 TP for TR 37.717-11-21: DC\_1A-41A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

(Replaces R4-2014853)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014855 TP for TR 37.717-11-21: DC\_3A-18A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014859 TP for TR 37.717-11-21: DC\_3A-18A\_n28A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014863 TP for TR 37.717-11-21: DC\_3A-18A\_n28A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014878 TP for TR 37.717-11-21: DC\_3A-18A\_n3A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016723**.

**R4-2016723 TP for TR 37.717-11-21: DC\_3A-18A\_n3A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

(Replaces R4-2014878)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014879 TP for TR 37.717-11-21: DC\_3A-18A\_n41A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014881 TP for TR 37.717-11-21: DC\_3A-18A\_n41A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014882 TP for TR 37.717-11-21: DC\_3A-41A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016724**.

**R4-2016724 TP for TR 37.717-11-21: DC\_3A-41A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

(Replaces R4-2014882)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014884 TP for TR 37.717-11-21: DC\_3A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016725**.

**R4-2016725 TP for TR 37.717-11-21: DC\_3A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

(Replaces R4-2014884)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014927 TP for TR 37.717-11-21: DC\_18A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014929 TP for TR 37.717-11-21: DC\_18A\_n28A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014930 TP for TR 37.717-11-21: DC\_18A\_n28A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014931 TP for TR 37.717-11-21: DC\_18A\_n3A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016726**.

**R4-2016726 TP for TR 37.717-11-21: DC\_18A\_n3A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

(Replaces R4-2014931)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014950 TP for TR 37.717-11-21: DC\_18A\_n41A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014951 TP for TR 37.717-11-21: DC\_18A\_n41A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: KDDI Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014983 TP for DC\_19\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014984 TP for DC\_21\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014985 TP for DC\_21\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014986 TP for DC\_21\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014987 TP for DC\_42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016727 TP for DC\_42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014988 TP for DC\_42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016728 TP for DC\_42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014989 TP for DC\_3-19\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014990 TP for DC\_3-19\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014991 TP for DC\_3-19\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014992 TP for DC\_3-21\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014993 TP for DC\_3-21\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014994 TP for DC\_3-21\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014995 TP for DC\_3-42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016729 TP for DC\_3-42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014996 TP for DC\_3-42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016730 TP for DC\_3-42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014997 TP for DC\_3-42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016731 TP for DC\_3-42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014998 TP for DC\_19-21\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014999 TP for DC\_19-21\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015000 TP for DC\_19-21\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015001 TP for DC\_19-42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016732 TP for DC\_19-42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015002 TP for DC\_19-42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016733 TP for DC\_19-42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015003 TP for DC\_19-42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016734 TP for DC\_19-42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015004 TP for DC\_21-42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016735 TP for DC\_21-42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015005 TP for DC\_21-42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016736 TP for DC\_21-42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015006 TP for DC\_21-42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016737 TP for DC\_21-42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015007 TP for DC\_3-19-42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016738 TP for DC\_3-19-42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015008 TP for DC\_3-19-42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016739 TP for DC\_3-19-42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015009 TP for DC\_3-19-42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016740 TP for DC\_3-19-42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015010 TP for DC\_3-21-42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016741 TP for DC\_3-21-42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015011 TP for DC\_3-21-42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016742 TP for DC\_3-21-42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015012 TP for DC\_3-21-42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016743 TP for DC\_3-21-42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015013 TP for DC\_19-21-42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016744 TP for DC\_19-21-42\_n1-n77 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015014 TP for DC\_19-21-42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016745 TP for DC\_19-21-42\_n1-n78 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015015 TP for DC\_19-21-42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016746 TP for DC\_19-21-42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015259 TP for DC\_42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016747 TP for DC\_42\_n1-n79 for TR 37.717-11-21**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2015420 DraftCR for 38.101-3 to add UL configuration DC\_3C\_n1A-n78A**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add ENDC UL configuration DC\_3C\_n1A-n78A.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015421 TP for TR 37.717-11-21:DC\_3A-20A\_n1A-n78A/DC\_3C-20A\_n1A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015422 TP for TR 37.717-11-21:DC\_7A-20A\_n1A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015423 DraftCR for 38.101-3 to add UL configuration DC\_3C\_n1A and DC\_3C\_n78A for DC\_3C-7A\_n1A-n78A**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add ENDC UL configuration for DC\_3C-7A\_n1A-n78A.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015424 TP for TR 37.717-11-21:DC\_3A-7A-20A\_n1A-n78A/DC\_3C-7A-20A\_n1A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015936 TP for TR 37.717-11-21 to include DC\_28A\_n1A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_28A\_n1A-n78A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015937 TP for TR 37.717-11-21 to include DC\_3A-7A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_3A-7A\_n40A-n78A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015938 TP for TR 37.717-11-21 to include DC\_1A-7A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_1A-7A\_n40A-n78A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015939 TP for TR 37.717-11-21 to include DC\_7A-28A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_7A-28A\_n40A-n78A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015940 TP for TR 37.717-11-21 to include DC\_3A-7A-28A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_3A-7A-28A\_n40A-n78A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015941 TP for TR 37.717-11-21 to include DC\_1A-3A-7A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_1A-3A-7A\_n40A-n78A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015942 TP for TR 37.717-11-21 to include DC\_1A-7A-28A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_1A-7A-28A\_n40A-n78A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015943 TP for TR 37.717-11-21 to include DC\_1A-3A-7A-28A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_1A-3A-7A-28A\_n40A-n78A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016312 CR to add CA\_n7B UL configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Ericsson, Telstra*

**Abstract:**

Adding CA\_n7B UL configurations

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **not pursued**.

**R4-2016313 TP for TR 37.717-11-21 to include DC\_2A\_n5A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon, LG Electronics*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_2A\_n5A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016314 TP for TR 37.717-11-21 to include DC\_2A-13A\_n66A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_2A-13A\_n66A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016315 TP for TR 37.717-11-21 to include DC\_2A\_n66A-n77A, DC\_2A-2A\_n66A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon, LG Electronics*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_2A\_n66A-n77A, DC\_2A-2A\_n66A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016316 TP for TR 37.717-11-21 to include DC\_2A-66A\_n66A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_2A-66A\_n66A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016317 TP for TR 37.717-11-21 to include DC\_2A-66A\_n5A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_2A-66A\_n5A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016318 TP for TR 37.717-11-21 to include DC\_13A\_n2A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon, LG Electronics*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_13A\_n2A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016319 TP for TR 37.717-11-21 to include DC\_13A\_n5A-n48A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_13A\_n5A-n48A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016320 TP for TR 37.717-11-21 to include DC\_13A\_n48A-n66A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_13A\_n48A-n66A

**Discussion:**

/ See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016321 TP for TR 37.717-11-21 to include DC\_13A\_n66A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon, LG Electronics*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_13A\_n66A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016322 TP for TR 37.717-11-21 to include DC\_13A-66A\_n66A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_13A-66A\_n66A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016323 TP for TR 37.717-11-21 to include DC\_13A-66A\_n2A-n77A**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_13A-66A\_n2A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016324 TP for TR 37.717-11-21 to include DC\_13-66\_n5-n48**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_13-66\_n5-n48

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016325 TP for TR 37.717-11-21 to include DC\_66\_n2-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_66\_n2-n77

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016326 TP for TR 37.717-11-21 to include DC\_66\_n5-n48**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_66\_n5-n48

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016327 TP for TR 37.717-11-21 to include DC\_66\_n5-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon, LG Electronics*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_66\_n5-n77

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016328 TP for TR 37.717-11-21 to include DC\_66\_n66-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_66\_n66-n77

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

#### 10.7.3 EN-DC including NR inter CA with FR2 band [DC\_R17\_xBLTE\_2BNR\_yDL2UL-Core]

**R4-2015047 TP for 37.717-11-21\_ DC\_40\_n41-n258**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015048 TP for 37.717-11-21\_ DC\_40\_n79-n258**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015049 TP for 37.717-11-21\_ DC\_41\_n79-n258**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015232 TP for 37.717-11-21 to introduce DC\_8A\_n78A-n258**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015233 TP for 37.717-11-21 to introduce DC\_8A\_n40A-n258**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015234 TP for 37.717-11-21 to introduce DC\_1A-8A\_n78A-n258**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015235 TP for 37.717-11-21 to introduce DC\_3A-8A\_n78A-n258**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015236 TP for 37.717-11-21 to introduce DC\_7A-8A\_n78A-n258**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015237 TP for 37.717-11-21 to introduce DC\_1A-8A\_n40A-n258**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015238 TP for 37.717-11-21 to introduce DC\_3A-8A\_n40A-n258**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015239 TP for 37.717-11-21 to introduce DC\_7A-8A\_n40A-n258**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015240 TP for 37.717-11-21 to introduce DC\_3A-7A-8A\_n78A-n258**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015241 TP for 37.717-11-21 to introduce DC\_3A-7A-8A\_n40A-n258**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016301 TP for TR 37.717-11-21 to include DC\_7A\_n78A-n258A to M, DC\_7C\_n78A-n258A to M**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Telstra*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_7A\_n78A-n258A to M, DC\_7C\_n78A-n258A to M

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016302 TP for TR 37.717-11-21 to include DC\_3A\_n78A-n258A to M**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Telstra*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_3A\_n78A-n258A to M

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016303 TP for TR 37.717-11-21 to include DC\_28A\_n78A-n258A to M**

*Type: pCR For: Approval  
 37.717-11-21 v0.1.0  
 Source: Ericsson, Telstra*

**Abstract:**

TP for TR 37.717-11-21 to include DC\_28A\_n78A-n258A to M

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

### 10.8 Band combinations for SA NR supplementary uplink (SUL), NSA NR SUL, NSA NR SUL with UL sharing from the UE perspective (ULSUP) [NR\_SUL\_combos\_R17]

#### 10.8.1 Rapporteur Input (WID/TR/CR) [NR\_SUL\_combos\_R17-Core/Per]

**R4-2014800 Revised WID on Band combinations for SA NR Supplementary uplink (SUL), NSA NR SUL, NSA NR SUL with UL sharing from the UE perspective (ULSUP)**

*Type: WID revised For: Endorsement  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2014801 TR 37.717-00-00 v0.2.0**

*Type: draft TR For: Agreement  
 37.717-00-00 v0.1.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To capture the approved TPs in this meeting

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2014802 CR on Introduction of completed SUL band combinations into TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0514 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2014803 CR on Introduction of completed SUL band combinations into TS 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0377 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.8.2 UE RF [NR\_SUL\_combos\_R17-Core]

**R4-2015535 DraftCR for 38.101-1 to add BCS1 for SUL\_n78A-n80A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add BCS1 for SUL\_n78A-n80A.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015536 DraftCR for 38.101-1 to add BCS1 for SUL\_n78A-n83A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add BCS1 for SUL\_n78A-n83A.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015537 DraftCR for 38.101-1 to add BCS1 for SUL\_n78A-n84A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add BCS1 for SUL\_n78A-n84A.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015538 DraftCR for 38.101-1 to add BCS1 for SUL\_n41A-n80A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add BCS1 for SUL\_n41A-n80A.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015539 DraftCR for 38.101-1 to add BCS1 for SUL\_n79A-n80A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add BCS1 for SUL\_n79A-n80A.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015540 TP for TR 37.717-00-00 to correct the notation of SUL band combinations**

*Type: pCR For: Approval  
 37.717-00-00 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015541 TP for TR 37.717-00-00 for CA\_n1A\_SUL\_n78A-n80A**

*Type: pCR For: Approval  
 37.717-00-00 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016748**.

**R4-2016748 TP for TR 37.717-00-00 for CA\_n1A\_SUL\_n78A-n80A**

*Type: pCR For: Approval  
 37.717-00-00 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015541)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015542 TP for TR 37.717-00-00 for CA\_n1A\_SUL\_n78A-n84A**

*Type: pCR For: Approval  
 37.717-00-00 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016749**.

**R4-2016749 TP for TR 37.717-00-00 for CA\_n1A\_SUL\_n78A-n84A**

*Type: pCR For: Approval  
 37.717-00-00 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015542)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015543 TP for TR 37.717-00-00 for CA\_n41A\_SUL\_n79A-n80A**

*Type: pCR For: Approval  
 37.717-00-00 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016750**.

**R4-2016750 TP for TR 37.717-00-00 for CA\_n41A\_SUL\_n79A-n80A**

*Type: pCR For: Approval  
 37.717-00-00 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015543)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015544 TP for TR 37.717-00-00 for CA\_n79A\_SUL\_n41A-n80A**

*Type: pCR For: Approval  
 37.717-00-00 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016751**.

**R4-2016751 TP for TR 37.717-00-00 for CA\_n79A\_SUL\_n41A-n80A**

*Type: pCR For: Approval  
 37.717-00-00 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015544)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015545 DraftCR for 38.101-1 to add configuration for SUL\_n41C-n80A / SUL\_n41C-n83A / SUL\_n78C-n80A / SUL\_n78C-n84A / SUL\_n79C-n80A / SUL\_n79C-n83A**

*Type: draftCR For: Endorsement  
 37.717-00-00 v0.1.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add configuration for SUL\_n41C-n80A / SUL\_n41C-n83A / SUL\_n78C-n80A / SUL\_n78C-n84A / SUL\_n79C-n80A / SUL\_n79C-n83A.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

### 10.9 NR Inter-band Carrier Aggregation for 3 bands DL with 1 band UL [NR\_CA\_R17\_3BDL\_1BUL]

#### 10.9.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R17\_3BDL\_1BUL-Core/Per]

**R4-2014460 TR 38.717-03-01 on Rel-17 NR inter-band Carrier Aggregation (CA) for 3 Down Link (DL) / 1 Up Link (UL)**

*Type: draft TR For: Agreement  
 38.717-03-01 v0.1.0  
 Source: CATT*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2014461 Revised WID on Rel-17 NR inter-band CA of 3DL bands and 1UL band**

*Type: WID revised For: Approval  
 Source: CATT*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

#### 10.9.2 UE RF [NR\_CA\_R17\_3BDL\_1BUL-Core]

**R4-2014112 TP for TR 38.717-03-01 CA\_n3-n41-n77**

*Type: pCR For: Approval  
 38.717-03-01 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016752**.

**R4-2016752 TP for TR 38.717-03-01 CA\_n3-n41-n77**

*Type: pCR For: Approval  
 38.717-03-01 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014112)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014113 TP for TR 38.717-03-01 CA\_n3-n41-n78**

*Type: pCR For: Approval  
 38.717-03-01 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016753**.

**R4-2016753 TP for TR 38.717-03-01 CA\_n3-n41-n78**

*Type: pCR For: Approval  
 38.717-03-01 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014113)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014114 TP for TR 38.717-03-01 CA\_n28-n41-n77**

*Type: pCR For: Approval  
 38.717-03-01 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014115 TP for TR 38.717-03-01 CA\_n28-n41-n78**

*Type: pCR For: Approval  
 38.717-03-01 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014462 CR on Introducing NR inter-band CA for 3DL Bands and 1UL band for 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0504 Cat: B (Rel-17)  
  
 Source: CATT*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2014463 CR on Introducing NR inter-band CA for 3DL Bands and 1UL band for 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0366 Cat: B (Rel-17)  
  
 Source: CATT*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2014523 draft CR for NR inter-band CA for 3 bands DL**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Nokia, T-Mobile USA*

**Abstract:**

Addition of higher order configurations.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2014526 TP for TR 38.717-03-01: CA\_n1A-n8A-n78(2A)**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.0  
 Source: Nokia, Telefonica*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016754**.

**R4-2016754 TP for TR 38.717-03-01: CA\_n1A-n8A-n78(2A)**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.0  
 Source: Nokia, Telefonica*

(Replaces R4-2014526)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015051 TP for TR38.717-03-01\_ CA\_n8A-n40A-n41A**

*Type: pCR For: Approval  
 38.717-03-01 v0.1.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015078 TP to TR 38.717-03-01: CA\_n5-n66-n77**

*Type: pCR For: Approval  
 38.717-03-01 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015079 TP to TR 38.717-03-01: CA\_n2-n66-n77**

*Type: pCR For: Approval  
 38.717-03-01 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015242 draftCR to introduce CA\_n1A-n40A-n258 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015243 draftCR to introduce CA\_n1A-n78A-n258 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015244 draftCR to introduce CA\_n40A-n78A-n258 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: Nokia*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015707 TP for TR 38.717-03-01: CA\_n66-n71-n78**

*Type: pCR For: Approval  
 38.717-03-01 v0.2.0  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015708 TP for TR 38.717-03-01: CA\_n38-n66-n78**

*Type: pCR For: Approval  
 38.717-03-01 v0.2.0  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015709 TP for TR 38.717-03-01: CA\_n25-n38-n78**

*Type: pCR For: Approval  
 38.717-03-01 v0.2.0  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016305 TP to add CA\_n3A-n5A-n7A, CA\_n3A-n5A-n7B**

*Type: pCR For: Approval  
 38.717-03-01 v0.1.0  
 Source: Ericsson, Telstra*

**Abstract:**

TP to add CA\_n3A-n5A-n7A, CA\_n3A-n5A-n7B

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016306 TP to add CA\_n5A-n7A-n78A, CA\_n5A-n7B-n78A**

*Type: pCR For: Approval  
 38.717-03-01 v0.1.0  
 Source: Ericsson, Telstra*

**Abstract:**

TP to add CA\_n5A-n7A-n78A, CA\_n5A-n7B-n78A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016649 TP to add 3DL/1UL CA\_n25A-n41A-n77A, CA\_n25A-n41(2A)-n77A, CA\_n25A-n41C-n77A**

*Type: pCR For: Approval  
 38.717-03-01 v0.1.0  
 Source: Ericsson, T-Mobile US*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016650 TP to add 3DL/1UL CA\_n25A-n66A-n77A**

*Type: pCR For: Approval  
 38.717-03-01 v..  
 Source: Ericsson, T-Mobile US*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016651 TP to add 3DL/1UL CA\_n25A-n71A-n77A**

*Type: pCR For: Approval  
 38.717-03-01 v..  
 Source: Ericsson, T-Mobile US*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016652 TP to add 3DL/1UL CA\_n41A-n66A-n77A, CA\_n41(2A)-n66A-n77A, CA\_n41C-n66A-n77A**

*Type: pCR For: Approval  
 38.717-03-01 v..  
 Source: Ericsson, T-Mobile US*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016653 TP to add 3DL/1UL CA\_n41A-n71A-n77A, CA\_n41(2A)-n71A-n77A, CA\_n41C-n71A-n77A**

*Type: pCR For: Approval  
 38.717-03-01 v..  
 Source: Ericsson, T-Mobile US*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016654 TP to add 3DL/1UL CA\_n66A-n71A-n77A**

*Type: pCR For: Approval  
 38.717-03-01 v..  
 Source: Ericsson, T-Mobile US*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

### 10.10 NR Inter-band Carrier Aggregation for 4 bands DL with 1 band UL [NR\_CA\_R17\_4BDL\_1BUL]

#### 10.10.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R17\_4BDL\_1BUL-Core/Per]

**R4-2015918 Revised WID 4 bands NR CA Rel-17**

*Type: WID revised For: Endorsement  
 Source: Ericsson*

**Abstract:**

Revised WID 4 bands NR CA Rel-17

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2015922 CR introduction completed band combinations NR Inter-band 4 bands CA -**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0549 Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR introduction completed band combinations NR Inter-band 4 bands CA -> 38.101-1

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015923 CR introduction completed band combinations NR Inter-band 4 bands CA -**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0401 Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR introduction completed band combinations NR Inter-band 4 bands CA -> 38.101-3

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015926 TR 38.717-04-01 v0.2.0 Rel-17 NR Inter-band 4 bands CA**

*Type: draft TR For: Agreement  
 38.717-04-01 v0.1.0  
 Source: Ericsson*

**Abstract:**

TR 38.717-04-01 v0.2.0 Rel-17 NR Inter-band 4 bands CA

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.10.2 UE RF [NR\_CA\_R17\_4BDL\_1BUL-Core]

**R4-2014118 TP for TR 38.717-04-01 CA\_n3-n28-n41-n77**

*Type: pCR For: Approval  
 38.717-04-01 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014816 TP for CA\_n1-n77-n79-n257 4DL/1UL for TR38.717-04-01**

*Type: pCR For: Approval  
 38.717-04-01 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014817 TP for CA\_n1-n78-n79-n257 4DL/1UL for TR38.717-04-01**

*Type: pCR For: Approval  
 38.717-04-01 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016307 TP to add CA\_n3A-n5A-n7A-n78A, CA\_n3A-n5A-n7B-n78A**

*Type: pCR For: Approval  
 38.717-04-01 v0.1.0  
 Source: Ericsson, Telstra*

**Abstract:**

TP to add CA\_n3A-n5A-n7A-n78A, CA\_n3A-n5A-n7B-n78A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

### 10.11 NR Inter-band Carrier Aggregation/Dual connectivity for 3 bands DL with 2 bands UL [NR\_CADC\_R17\_3BDL\_2BUL]

#### 10.11.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R17\_3BDL\_2BUL-Core/Per]

**R4-2015060 Revised WID on Rel-17 NR Inter-band Carrier AggregationDual Connectivity for 3 bands DL with 2 bands UL**

*Type: WID revised For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2015061 Draft CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-1**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2017807 CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0586 Cat: B (Rel-17)  
  
 Source: ZTE*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015062 Draft CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2017808 CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0427 Cat: B (Rel-17)  
  
 Source: ZTE*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015185 TR 38.717-03-02 v0.2.0**

*Type: draft TR For: Agreement  
 38.717-03-02 v0.2.0  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.11.2 UE RF [NR\_CADC\_R17\_3BDL\_2BUL-Core]

**R4-2014116 TP for TR 38.717-03-02 CA\_n3-n28-n41**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016755**.

**R4-2016755 TP for TR 38.717-03-02 CA\_n3-n28-n41**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014116)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014117 TP for TR 38.717-03-02 CA\_n3-n28-n78**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016756**.

**R4-2016756 TP for TR 38.717-03-02 CA\_n3-n28-n78**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Samsung, KDDI*

(Replaces R4-2014117)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014595 TP for CA 3DL2UL n1-n77-n79 for TR 38.717-03-02**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: NTT DOCOMO, INC., MediaTek Inc., LG Electronics*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016757**.

**R4-2016757 TP for CA 3DL2UL n1-n77-n79 for TR 38.717-03-02**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: NTT DOCOMO, INC., MediaTek Inc., LG Electronics*

(Replaces R4-2014595)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014599 TP for CA 3DL2UL n1-n78-n79 for TR 38.717-03-02**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: NTT DOCOMO, INC., MediaTek Inc., LG Electronics*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016758**.

**R4-2016758 TP for CA 3DL2UL n1-n78-n79 for TR 38.717-03-02**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: NTT DOCOMO, INC., MediaTek Inc., LG Electronics*

(Replaces R4-2014599)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014814 draft CR 38.101-3 to add DC\_n1-n77-n257, DC\_n1-n78-n257, DC\_n1-n79-n257, DC\_n77-n79-n257 and DC\_n78-n79-n257**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: NTT DOCOMO, INC.*

**Abstract:**

Adding configurations to existing DC combinations. The following NR DC configurations are specified by draft CR according to the agreement described in R4-2005647 since corresponding NR CA configurations have been already aprroved.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2015052 TP for TR38.717-03-02\_ CA\_n8A-n40A-n41A**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015068 MSD evaluation for CA 3DL2UL n1-n77-n79 for TR 38.717-03-02**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: MediaTek Inc.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **noted**.

**R4-2015080 TP to TR 38.717-03-02: CA\_n5-n66-n77**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015081 TP to TR 38.717-03-02: CA\_n2-n66-n77**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016333 TP to add CA\_n25A-n41A-n77A, CA\_n25A-n41(2A)-n77A, CA\_n25A-n41C-n77A**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Ericsson, T-Mobile US*

**Abstract:**

TP to add CA\_n25A-n41A-n77A, CA\_n25A-n41(2A)-n77A, CA\_n25A-n41C-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016759**.

**R4-2016759 TP to add CA\_n25A-n41A-n77A, CA\_n25A-n41(2A)-n77A, CA\_n25A-n41C-n77A**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Ericsson, T-Mobile US*

(Replaces R4-2016333)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016334 TP to add CA\_n25A-n66A-n77A**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Ericsson, T-Mobile US*

**Abstract:**

TP to add CA\_n25A-n66A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016760**.

**R4-2016760 TP to add CA\_n25A-n66A-n77A**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Ericsson, T-Mobile US*

(Replaces R4-2016334)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016335 TP to add CA\_n25A-n71A-n77A**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Ericsson, T-Mobile US*

**Abstract:**

TP to add CA\_n25A-n71A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016761**.

**R4-2016761 TP to add CA\_n25A-n71A-n77A**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Ericsson, T-Mobile US*

(Replaces R4-2016335)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016336 TP to add CA\_n41A-n66A-n77A, CA\_n41(2A)-n66A-n77A, CA\_n41C-n66A-n77A**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Ericsson, T-Mobile US*

**Abstract:**

TP to add CA\_n41A-n66A-n77A, CA\_n41(2A)-n66A-n77A, CA\_n41C-n66A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016762**.

**R4-2016762 TP to add CA\_n41A-n66A-n77A, CA\_n41(2A)-n66A-n77A, CA\_n41C-n66A-n77A**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Ericsson, T-Mobile US*

(Replaces R4-2016336)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016337 TP to add CA\_n41A-n71A-n77A, CA\_n41(2A)-n71A-n77A, CA\_n41C-n71A-n77A**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Ericsson, T-Mobile US*

**Abstract:**

TP to add CA\_n41A-n71A-n77A, CA\_n41(2A)-n71A-n77A, CA\_n41C-n71A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016763**.

**R4-2016763 TP to add CA\_n41A-n71A-n77A, CA\_n41(2A)-n71A-n77A, CA\_n41C-n71A-n77A**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Ericsson, T-Mobile US*

(Replaces R4-2016337)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2016338 TP to add CA\_n66A-n71A-n77A**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Ericsson, T-Mobile US*

**Abstract:**

TP to add CA\_n66A-n71A-n77A

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016764**.

**R4-2016764 TP to add CA\_n66A-n71A-n77A**

*Type: pCR For: Approval  
 38.717-03-02 v0.1.0  
 Source: Ericsson, T-Mobile US*

(Replaces R4-2016338)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

### 10.12 DC of x bands (x=1,2) LTE inter-band CA (xDL/xUL) and y bands (y=3-x) NR inter-band CA [DC\_R17\_xBLTE\_yBNR\_3DL3UL]

#### 10.12.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_xBLTE\_yBNR\_3DL3UL-Core/Per]

**R4-2015063 Revised WID on Rel-17 Dual Connectivity (DC) x bands (x=1,2) LTE inter-band CA (xDL/xUL) and y bands (y=3-x) NR inter-band CA**

*Type: WID revised For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2015064 Draft CR to reflect the completed DC combinations for 3 bands DL with 3 bands UL into TS 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2017809 CR to reflect the completed DC combinations for 3 bands DL with 3 bands UL into TS 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0428 Cat: B (Rel-17)  
  
 Source: ZTE*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015065 TR 37.717-33 v0.2.0**

*Type: draft TR For: Agreement  
 37.717-33 v0.1.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

#### 10.12.2 UE RF [DC\_R17\_xBLTE\_yBNR\_3DL3UL-Core]

### 10.13 DC of x bands (x=1,2,3) LTE inter-band CA (xDL/1UL) and 3 bands NR inter-band CA (3DL/1UL) [DC\_R17\_xBLTE\_3BNR\_yDL2UL]

#### 10.13.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_xBLTE\_3BNR\_yDL2UL -Core/Per]

**R4-2015066 Revised WID on Rel-17 Dual Connectivity (DC) of x bands (x=1,2,3) LTE inter-band CA (xDL1UL) and 3 bands NR inter-band CA (3DL1UL)**

*Type: WID revised For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2015067 TR 37.717-11-31\_v0.2.0**

*Type: draft TR For: Agreement  
 37.717-11-31 v0.2.0  
 Source: ZTE Corporation*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015588 Draft CR to reflect the completed Dual Connectivity (DC) of x bands (x=1,2,3) LTE inter-band CA (xDL1UL) and 3 bands NR inter-band CA (3DL1UL)**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2017810 CR to reflect the completed Dual Connectivity (DC) of x bands (x=1,2,3) LTE inter-band CA (xDL1UL) and 3 bands NR inter-band CA (3DL1UL)**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0429 Cat: B (Rel-17)  
  
 Source: ZTE*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.13.2 UE RF [DC\_R17\_xBLTE\_3BNR\_yDL2UL-Core]

**R4-2014706 TP for TR 37.716-11-31: EN-DC\_1\_n3-n28-n77**

*Type: pCR For: Approval  
 37.717-11-31 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016765**.

**R4-2016765 TP for TR 37.716-11-31: EN-DC\_1\_n3-n28-n77**

*Type: pCR For: Approval  
 37.717-11-31 v0.1.0  
 Source: SoftBank Corp.*

(Replaces R4-2014706)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014707 TP for TR 37.717-11-31: EN-DC\_8\_n3-n28-n77**

*Type: pCR For: Approval  
 37.717-11-31 v0.1.0  
 Source: SoftBank Corp.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **revised to R4-2016766**.

**R4-2016766 TP for TR 37.717-11-31: EN-DC\_8\_n3-n28-n77**

*Type: pCR For: Approval  
 37.717-11-31 v0.1.0  
 Source: SoftBank Corp.*

(Replaces R4-2014707)

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015050 TP for 37.717-11-31\_ DC\_8A\_n40A-n41A-n79A**

*Type: pCR For: Approval  
 37.717-11-31 v0.1.0  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015802 TP for TR 37.717-11-31: support of DC\_3\_n1-n78-n257, DC\_3-3\_n1-n78-n257, DC\_7\_n1-n78-n257, DC\_7-7\_n1-n78-n257**

*Type: pCR For: Approval  
 37.717-11-31 v0.1.0  
 Source: CHTTL*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015806 TP for TR 37.717-11-31: support of DC\_3-7\_n1-n78-n257, DC\_3-3-7\_n1-n78-n257, DC\_3-7-7\_n1-n78-n257, DC\_3-3-7-7\_n1-n78-n257**

*Type: pCR For: Approval  
 37.717-11-31 v0.1.0  
 Source: CHTTL*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

### 10.14 NR inter-band Carrier Aggregation and Dual connectivity for DL 4 bands and 2UL bands [NR\_CADC\_R17\_4BDL\_2BUL]

#### 10.14.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R17\_4BDL\_2BUL -Core/Per]

**R4-2014380 TR38.717-04-02 update version 0.2.0**

*Type: draft TR For: Agreement  
 38.717-04-02 v0.1.0  
 Source: Samsung Electronics GmbH*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2014753 Revised WID on NR CA/DC with 4DL/2UL**

*Type: WID revised For: Decision  
 Source: Samsung*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2014754 CR on introduction of completed NR CA/DC combs with 4DL/2UL within FR1**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0513 Cat: B (Rel-17)  
  
 Source: Samsung*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2014755 CR on introduction of completed NR CA/DC combs with 4DL/2UL including FR2**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0373 Cat: B (Rel-17)  
  
 Source: Samsung*

**Abstract:**

Both resubmission of combs endorsed in CR R4-2010145 and combs approved in RAN4#97e will be included in this CR.

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.14.2 UE RF [NR\_CADC\_R17\_4BDL\_2BUL -Core]

**R4-2014119 TP for TR 38.717-04-02 CA\_n3-n28-n41-n77**

*Type: pCR For: Approval  
 38.717-04-02 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014120 TP for TR 38.717-04-02 CA\_n3-n28-n41-n78**

*Type: pCR For: Approval  
 38.717-04-02 v0.1.0  
 Source: Samsung, KDDI*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014815 draft CR 38.101-3 to add DC\_n1-n77-n79-n257 and DC\_n1-n78-n79-n257**

*Type: draftCR For: Endorsement  
 38.101-3 v16.5.0  
 Source: NTT DOCOMO, INC.*

**Abstract:**

Adding configurations to existing DC combinations. The following NR DC configurations are specified by draft CR according to the agreement described in R4-2005647 since corresponding NR CA configurations are to be aprroved in RAN4#97.

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **endorsed**.

**R4-2014818 TP for CA\_n1-n77-n79-n257 4DL/2UL for TR38.717-04-02**

*Type: pCR For: Approval  
 38.717-04-02 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2014819 TP for CA\_n1-n78-n79-n257 4DL/2UL for TR38.717-04-02**

*Type: pCR For: Approval  
 38.717-04-02 v0.1.0  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

### 10.15 NR inter-band CA for 5 bands DL with x bands UL (x=1, 2) [NR\_CADC\_R17\_5BDL\_xBUL\_3DL3UL]

#### 10.15.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R17\_5BDL\_xBUL -Core/Per]

**R4-2014804 Revised WID on NR inter-band CA for 5 bands DL with x bands UL (x=1, 2)**

*Type: WID revised For: Endorsement  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2014805 TR 38.717-05-01 v0.2.0**

*Type: draft TR For: Agreement  
 38.717-05-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To capture the approved TPs in this meeting

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **withdrawn**.

**R4-2014806 CR on Introduction of completed 5 bands inter-band CA into TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0515 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **withdrawn**.

#### 10.15.2 UE RF [NR\_CADC\_R17\_5BDL\_xBUL -Core]

### 10.16 DC of 5 bands LTE inter-band CA (5DL/1L) and 1 NR band (1DL/1UL) [DC\_R17\_5BLTE\_1BNR\_6DL2UL]

#### 10.16.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_5BLTE\_1BNR\_6DL2UL-Core/Per]

**R4-2014781 Revised WID on Dual Connectivity (DC) of 5 bands LTE inter-band CA (5DL/1UL) and 1 NR band (1DL/1UL)**

*Type: WID revised For: Information  
 Source: Samsung*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2014782 CR introduction completed band combinations for Dual Connectivity (DC) of 5 bands LTE inter-band CA (5DL/1UL) and 1 NR band (1DL/1UL)**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0374 Cat: B (Rel-17)  
  
 Source: Samsung*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2014967 Skeleton on TR 37.717-51-11\_0.0.1**

*Type: draft TR For: Agreement  
 37.717-51-11 v0.0.1  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **agreed**.

**R4-2014968 TR 37.717-51-11\_0.1.0**

*Type: draft TR For: Agreement  
 37.717-51-11 v0.1.0  
 Source: Samsung*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.16.2 UE RF [DC\_R17\_5BLTE\_1BNR\_6DL2UL-Core]

**R4-2015282 TP to TR 37.717-51-11 DC\_1A-3A-7A-8A-40C\_n78A**

*Type: pCR For: Approval  
 37.717-51-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][119] NR\_Baskets\_Part\_1 in R4-2016621.

**Decision:** The document was **approved**.

### 10.17 DC of x bands (x=2,3,4) LTE inter-band CA (xDL/1UL) and 1 NR FR1 band (1DL/1UL) and 1 NR FR2 band (1DL/1UL) [DC\_R17\_xBLTE\_2BNR\_yDL3UL]

#### 10.17.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_xBLTE\_2BNR\_yDL3UL-Core/Per]

**R4-2014783 CR introduction completed band combinations for Dual Connectivity (DC) of x bands (x=2,3,4) LTE inter-band CA (xDL/1UL) and 1 NR FR1 band (1DL/1UL) and 1 NR FR2 band (1DL/1UL)**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0375 Cat: B (Rel-17)  
  
 Source: Samsung*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2014784 Revised WID on Dual Connectivity (DC) of x bands (x=2,3,4) LTE inter-band CA (xDL/1UL) and 1 NR FR1 band (1DL/1UL) and 1 NR FR2 band (1DL/1UL)**

*Type: WID revised For: Information  
 Source: Samsung*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2014969 Skeleton on TR 37.717-21-22\_0.0.1**

*Type: draft TR For: Agreement  
 37.717-21-22 v0.0.1  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **agreed**.

**R4-2014970 TR 37.717-21-22\_0.1.0**

*Type: draft TR For: Agreement  
 37.717-21-22 v0.1.0  
 Source: Samsung*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.17.2 UE RF [DC\_R17\_xBLTE\_2BNR\_yDL3UL-Core]

**R4-2015136 TP for TR 37.717-21-22: DC\_1-3\_n78-n257**

*Type: discussion For: Approval  
 37.717-21-22 v..  
 Source: SK Telecom, Samsung*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015137 TP for TR 37.717-21-22: DC\_1-5\_n78-n257**

*Type: discussion For: Approval  
 37.717-21-22 v..  
 Source: SK Telecom, Samsung*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015138 TP for TR 37.717-21-22: DC\_1-7\_n78-n257 and DC\_1-7-7\_n78-n257**

*Type: discussion For: Approval  
 37.717-21-22 v..  
 Source: SK Telecom, Samsung*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015139 TP for TR 37.717-21-22: DC\_3-5\_n78-n257**

*Type: discussion For: Approval  
 37.717-21-22 v..  
 Source: SK Telecom, Samsung*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015140 TP for TR 37.717-21-22: DC\_3-7\_n78-n257 and DC\_3-7-7\_n78-n257**

*Type: discussion For: Approval  
 37.717-21-22 v..  
 Source: SK Telecom, Samsung*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015141 TP for TR 37.717-21-22: DC\_5-7\_n78-n257 and DC\_5-7-7\_n78-n257**

*Type: discussion For: Approval  
 37.717-21-22 v..  
 Source: SK Telecom, Samsung*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015142 TP for TR 37.717-21-22: DC\_1-3-5\_n78-n257**

*Type: discussion For: Approval  
 37.717-21-22 v..  
 Source: SK Telecom, Samsung*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015143 TP for TR 37.717-21-22: DC\_1-3-7\_n78-n257 and DC\_1-3-7-7\_n78-n257**

*Type: discussion For: Approval  
 37.717-21-22 v..  
 Source: SK Telecom, Samsung*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015144 TP for TR 37.717-21-22: DC\_1-5-7\_n78-n257 and DC\_1-5-7-7\_n78-n257**

*Type: discussion For: Approval  
 37.717-21-22 v..  
 Source: SK Telecom, Samsung*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015145 TP for TR 37.717-21-22: DC\_3-5-7\_n78-n257 and DC\_3-5-7-7\_n78-n257**

*Type: discussion For: Approval  
 37.717-21-22 v..  
 Source: SK Telecom, Samsung*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

**R4-2015146 TP for TR 37.717-21-22: DC\_1-3-5-7\_n78-n257 and DC\_1-3-5-7-7\_n78-n257**

*Type: discussion For: Approval  
 37.717-21-22 v..  
 Source: SK Telecom, Samsung*

**Discussion:**

See email discussion summary for [97e][120] NR\_Baskets\_Part\_2 in R4-2016622.

**Decision:** The document was **approved**.

### 10.18 SAR schemes for UE power class 2 (PC2) for NR inter-band Carrier Aggregation and supplemental uplink (SUL) configurations with 2 bands UL [NR\_SAR\_PC2\_interB\_SUL\_2BUL]

**R4-2016623 Email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL**

*Type: other For: discussion  
 Source: Moderator (China Telecom)*

**Discussion:**

The contribution summarized email discussion thread [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL. The subject for discussion was SAR schemes for UE power class 2 (PC2) for NR inter-band Carrier Aggregation and supplemental uplink (SUL) configurations with 2 bands UL. The email thread was moderated by Bo Liu (China Telecom Corporation Ltd.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016963**.

**R4-2016963 Email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL**

*Type: other For: discussion  
 Source: Moderator (China Telecom)*

(Replaces R4-2016623)

**Discussion:**

The contribution summarized email discussion thread [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL. The subject for discussion was SAR schemes for UE power class 2 (PC2) for NR inter-band Carrier Aggregation and supplemental uplink (SUL) configurations with 2 bands UL. The email thread was moderated by Bo Liu (China Telecom Corporation Ltd.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016851 WF on SAR solutions for PC2 NR inter-band CA and SUL configurations**

*Type: other For: discussion  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **approved**.

**R4-2016852 WF on power configuration for PC2 NR inter-band CA**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

#### 10.18.1 General and Rapporteur Input (WID/TR/CR) [NR\_SAR\_PC2\_interB\_SUL\_2BUL-Core/Per]

**R4-2014383 Discussion on SAR issues for inter-band and SUL 2UL CA PC2**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

**R4-2015039 On MSD for PC2 n41-n79 NR inter-band CA**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

**R4-2015266 MSD analysis on high power UE for CA\_n41-n79**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

#### 10.18.2 PC2 for inter-band CA [NR\_SAR\_PC2\_interB\_SUL\_2BUL-Core]

**R4-2015040 Discussion on SAR solution for NR PC2 inter-band CA**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

**R4-2015190 Discussion on SAR schemes for UE power class 2 NR inter-band CA with 2UL**

*Type: other For: Approval  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

**R4-2015192 draft CR to 38.101-1 Introduce SAR solution for UE power class 2 NR inter-band CA with 2UL**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: China Telecom*

**Abstract:**

Introduce SAR solution for UE power class 2 NR inter-band CA with 2UL

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **not pursued**.

**R4-2015193 draft CR to 38.101-1 Introduce band combination requirements for PC2 CA\_n1A-n78A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: China Telecom*

**Abstract:**

Introduce band combination requirements for PC2 CA\_n1A-n78A

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **withdrawn**.

**R4-2015260 Discussion on SAR issue for HP UE inter-band UL CA**

*Type: other For: Approval  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

**R4-2015287 Discussion on the SAR solutions for UL CA band combinations**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

**R4-2015329 Discussion on SAR solution for PC2 inter-band NR CA**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

**R4-2015346 Discussion on inter-band CA HPUE SAR**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

**R4-2015889 CR to 38.101-1 Introduce band combination requirements for PC2 CA\_n1A-n78A**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0545 Cat: B (Rel-17)  
  
 Source: China Telecom, ZTE, Huawei, HiSilicon, CATT*

**Abstract:**

Introduce band combination requirements for PC2 CA\_n1A-n78A

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **agreed**.

**R4-2015983 Facilitating SAR compliance for UL inter-band CA PC2**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss and propose methods for facilitating SAR compliance for UL CA PC2 (also applicable for SUL)

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

**R4-2016439 Upper limits on output power for dual PA**

*Type: discussion For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

#### 10.18.3 PC2 for SUL [NR\_SAR\_PC2\_interB\_SUL\_2BUL-Core]

**R4-2015041 Discussion on SAR solution for NR PC2 SUL**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

**R4-2015191 Discussion on SAR schemes for UE power class 2 NR SUL configurations**

*Type: other For: Approval  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

**R4-2015194 draft CR to 38.101-1 Introduce SAR solution for UE power class 2 NR SUL configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: China Telecom*

**Abstract:**

Introduce SAR solution for UE power class 2 NR SUL configurations

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **not pursued**.

**R4-2015286 Discussion on the SAR solutions for SUL band combinations**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

**R4-2015330 Discussion on SAR solution for PC2 UE with SUL**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

**R4-2015345 Discussion on SUL HPUE SAR**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL in R4-2016623.

**Decision:** The document was **noted**.

### 10.19 High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink [NR\_PC2\_CA\_R17\_2BDL\_2BUL]

**R4-2016624 Email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL**

*Type: other For: discussion  
 Source: Moderator (China Telecom)*

**Discussion:**

The contribution summarized email discussion thread [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL. The subject for discussion was High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink. The email thread was moderated by Bo Liu (China Telecom Corporation Ltd.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016964**.

**R4-2016964 Email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL**

*Type: other For: discussion  
 Source: Moderator (China Telecom)*

(Replaces R4-2016624)

**Discussion:**

The contribution summarized email discussion thread [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL. The subject for discussion was High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink. The email thread was moderated by Bo Liu (China Telecom Corporation Ltd.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016854 WF on MSD assumptions improvement for UE PC2 combinations**

*Type: other For: discussion  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL in R4-2016624.

**Decision:** The document was **noted**.

#### 10.19.1 Rapporteur Input (WID/TR/CR) [NR\_PC2\_CA\_R17\_2BDL\_2BUL-Core/Per]

**R4-2015186 Work plan and procedure for basket WI on high power UE for NR inter-band CA with 2 bands DL and 2 bands UL**

*Type: other For: Approval  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL in R4-2016624.

**Decision:** The document was **approved**.

**R4-2015187 TR skeleton for TR 38.xxx 0.0.1: High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink**

*Type: other For: Approval  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL in R4-2016624.

**Decision:** The document was **agreed**.

**R4-2015188 Draft TR 38.xxx v0.1.0: High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink**

*Type: other For: Approval  
 Source: China Telecom*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015189 Revised WID: High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink**

*Type: WID revised For: Approval  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL in R4-2016624.

**Decision:** The document was **endorsed**.

**R4-2016853 Revised WID: High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink**

*Type: WID revised For: Approval  
 Source: China Telecom*

(Replaces R4-2015189)

**Discussion:**

See email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL in R4-2016624.

**Decision:** The document was **withdrawn**.

#### 10.19.2 UE RF [NR\_PC2\_CA\_R17\_2BDL\_2BUL-Core]

**R4-2015053 TP for TR38.xxx\_ PC2 CA\_n3A-n41A**

*Type: other For: Approval  
 Source: ZTE Corporation, CMCC*

**Discussion:**

See email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL in R4-2016624.

**Decision:** The document was **revised to R4-2016855**.

**R4-2016855 TP for TR38.xxx\_ PC2 CA\_n3A-n41A**

*Type: other For: Approval  
 Source: ZTE Corporation, CMCC*

(Replaces R4-2015053)

**Discussion:**

See email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL in R4-2016624.

**Decision:** The document was **approved**.

**R4-2015054 TP for TR38.xxx\_ PC2 CA\_n28A-n41A**

*Type: other For: Approval  
 Source: ZTE Corporation, CMCC*

**Discussion:**

See email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL in R4-2016624.

**Decision:** The document was **approved**.

**R4-2015055 TP for TR38.xxx\_ PC2 CA\_n28A-n79A**

*Type: other For: Approval  
 Source: ZTE Corporation, CMCC*

**Discussion:**

See email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL in R4-2016624.

**Decision:** The document was **approved**.

**R4-2015056 TP for TR38.xxx\_ PC2 CA\_n40A-n41A**

*Type: other For: Approval  
 Source: ZTE Corporation, CMCC*

**Discussion:**

See email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL in R4-2016624.

**Decision:** The document was **approved**.

**R4-2016441 MSD for Band n77 PC2 combinations**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL in R4-2016624.

**Decision:** The document was **noted**.

### 10.20 High power UE (power class 2) for EN-DC with 1 LTE band + 1 NR TDD band [ENDC\_UE\_PC2\_R17\_NR\_TDD]

**R4-2016625 Email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD**

*Type: other For: discussion  
 Source: Moderator (China Unicom)*

**Discussion:**

The contribution summarized email discussion thread [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD. The subject for discussion was High power UE (power class 2) for EN-DC with 1 LTE band + 1 NR TDD band. The email thread was moderated by Basaier Jialade (China Unicom) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016965**.

**R4-2016965 Email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD**

*Type: other For: discussion  
 Source: Moderator (China Unicom)*

(Replaces R4-2016625)

**Discussion:**

The contribution summarized email discussion thread [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD. The subject for discussion was High power UE (power class 2) for EN-DC with 1 LTE band + 1 NR TDD band. The email thread was moderated by Basaier Jialade (China Unicom) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

#### 10.20.1 Rapporteur Input (WID/TR/CR) [ENDC\_UE\_PC2\_R17\_NR\_TDD -Core/Per]

**R4-2014649 TR Skeleton for TR 37.826 v0.0.1 ENDC\_UE\_PC2\_R17\_NR\_TDD**

*Type: draft TR For: Agreement  
 37.826 v0.0.1  
 Source: China Unicom*

**Discussion:**

See email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD in R4-2016625.

**Decision:** The document was **agreed**.

**R4-2017840 TR Skeleton for TR 37.826 v0.1.0 ENDC\_UE\_PC2\_R17\_NR\_TDD**

*Type: draft TR For: Agreement  
 37.826 v0.1.0  
 Source: China Unicom*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2017841 Revised WID on High power UE (power class 2) for EN-DC with 1 LTE band + 1 NR TDD band**

*Type: WID revised For: discussion  
 Source: China Unicom*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2014708 Big CR on introduction of completed PC2 for EN-DC with 1 LTE band + 1 NR TDD band**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0371 Cat: B (Rel-17)  
  
 Source: China Unicom*

**Discussion:**

See email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD in R4-2016625.

**Decision:** The document was **agreed**.

**R4-2014709 Big CR on introduction of completed PC2 for EN-DC with 1 LTE band + 1 NR TDD band**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0372 Cat: B (Rel-17)  
  
 Source: China Unicom*

**Discussion:**

See email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD in R4-2016625.

**Decision:** The document was **withdrawn**.

#### 10.20.2 UE RF [ENDC\_UE\_PC2\_R17\_NR\_TDD -Core]

**R4-2014679 TP for TR 37.826 to introduce PC2 for DC\_1A\_n78A**

*Type: pCR For: Approval  
 37.826 v0.0.1  
 Source: China Unicom*

**Discussion:**

See email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD in R4-2016625.

**Decision:** The document was **revised to R4-2016856**.

**R4-2016856 TP for TR 37.826 to introduce PC2 for DC\_1A\_n78A**

*Type: pCR For: Approval  
 37.826 v0.0.1  
 Source: China Unicom*

(Replaces R4-2014679)

**Discussion:**

See email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD in R4-2016625.

**Decision:** The document was **approved**.

**R4-2014680 TP for TR 37.826 to introduce PC2 for DC\_8A\_n78A**

*Type: pCR For: Approval  
 37.826 v0.0.1  
 Source: China Unicom*

**Discussion:**

See email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD in R4-2016625.

**Decision:** The document was **revised to R4-2016857**.

**R4-2016857 TP for TR 37.826 to introduce PC2 for DC\_8A\_n78A**

*Type: pCR For: Approval  
 37.826 v0.0.1  
 Source: China Unicom*

(Replaces R4-2014680)

**Discussion:**

See email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD in R4-2016625.

**Decision:** The document was **approved**.

**R4-2015793 Discussion on release independent of FDD-TDD EN-DC High Power UE**

*Type: discussion For: Approval  
 Source: CHTTL*

**Discussion:**

See email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD in R4-2016625.

**Decision:** The document was **noted**.

**R4-2016440 Improving PC2 MSD for EN-DC and UL CA**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD in R4-2016625.

**Decision:** The document was **noted**.

**R4-2016987 CR to TS 38.307 on Release independence of FDD-TDD EN-DC High Power UE**

*Type: CR For: Agreement  
 38.307 v16.4.0 CR-0041 Cat: B (Rel-16)  
  
 Source: CHTTL, China Unicom*

**Discussion:**

See email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD in R4-2016625.

**Decision:** The document was **agreed**.

### 10.21 Adding channel bandwidth support to existing NR bands [NR\_bands\_R17\_BWs]

**R4-2016626 Email discussion summary for [97e][124] NR\_bands\_R17\_BWs**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][124] NR\_bands\_R17\_BWs. The subject for discussion was adding channel bandwidth support to existing NR bands. The email thread was moderated by Dominique Evereare (Ericsson Limited) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016966**.

**R4-2016966 Email discussion summary for [97e][124] NR\_bands\_R17\_BWs**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2016626)

**Discussion:**

The contribution summarized email discussion thread [97e][124] NR\_bands\_R17\_BWs. The subject for discussion was adding channel bandwidth support to existing NR bands. The email thread was moderated by Dominique Evereare (Ericsson Limited) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

#### 10.21.1 General and Rapporteur Input (WID/TR/CR) [NR\_bands\_R17\_BWs -Core/Per]

**R4-2015910 Revised RP-201294 - Basket WID on adding channel bandwidth support to existing NR bands**

*Type: WID revised For: Endorsement  
 Source: Ericsson*

**Abstract:**

This contribution is the revision of RP-201294 to include the new requests received before RAN4#96e meeting

**Discussion:**

See email discussion summary for [97e][124] NR\_bands\_R17\_BWs in R4-2016626.

**Decision:** The document was **revised to R4-2016858**.

**R4-2016858 Revised RP-201294 - Basket WID on adding channel bandwidth support to existing NR bands**

*Type: WID revised For: Endorsement  
 Source: Ericsson*

(Replaces R4-2015910)

**Discussion:**

See email discussion summary for [97e][124] NR\_bands\_R17\_BWs in R4-2016626.

**Decision:** The document was **endorsed**.

**R4-2015911 Big CR to 38.104 - Additional Channel BW**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0258 Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Add following channel BWs support: 70MHz in n48, 30MHz in n83 and 25/30/40/50 MHz in n84.

**Discussion:**

See email discussion summary for [97e][124] NR\_bands\_R17\_BWs in R4-2016626.

**Decision:** The document was **revised to R4-2016859**.

**R4-2016859 Big CR to 38.104 - Additional Channel BW**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0258 rev 1 Cat: B (Rel-17)  
  
 Source: Ericsson*

(Replaces R4-2015911)

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015912 Big CR to 38.101-1 - Additional Channel BW**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0546 Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Add following channel BWs support: 70MHz in n41, 70MHz in n48, 30MHz in n83 and 25/30/40/50 MHz in n84.

**Discussion:**

See email discussion summary for [97e][124] NR\_bands\_R17\_BWs in R4-2016626.

**Decision:** The document was **revised to R4-2016860**.

**R4-2016860 Big CR to 38.101-1 - Additional Channel BW**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0546 rev 1 Cat: B (Rel-17)  
  
 Source: Ericsson*

(Replaces R4-2015912)

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 10.21.2 UE RF requirement [NR\_bands\_R17\_BWs -Core]

**R4-2015292 Adding 40M bandwidth for band n80 and n83**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][124] NR\_bands\_R17\_BWs in R4-2016626.

**Decision:** The document was **noted**.

**R4-2015293 draftCR to 38101-1 to add 40MHz BW for band n80**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR is to introduce UE RF requirements for adding 40MHz channel bandwidth for band n80.

**Discussion:**

See email discussion summary for [97e][124] NR\_bands\_R17\_BWs in R4-2016626.

**Decision:** The document was **endorsed**.

**R4-2015296 Adding 90 and 100MHz UE bandwidth for band n40**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][124] NR\_bands\_R17\_BWs in R4-2016626.

**Decision:** The document was **noted**.

**R4-2015297 draftCR to 38101-1 to add 90 and 100MHz BW for band n40**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR is to introduce UE RF requirements for adding 90 and 100MHz channel bandwidth for band n40.

**Discussion:**

See email discussion summary for [97e][124] NR\_bands\_R17\_BWs in R4-2016626.

**Decision:** The document was **revised to R4-2016861**.

**R4-2016861 draftCR to 38101-1 to add 90 and 100MHz BW for band n40**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015297)

**Discussion:**

See email discussion summary for [97e][124] NR\_bands\_R17\_BWs in R4-2016626.

**Decision:** The document was **not pursued**.

##### 10.21.2.1 Reference sensitivity [NR\_bands\_R17\_BWs -Core]

##### 10.21.2.2 MPR/A-MPR/NS signaling [NR\_bands\_R17\_BWs -Core]

**R4-2014593 n40 MPR and Interference for Additional Channel Bandwidths**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution, we discuss the related fractional BW criteria issue, deltaMPR and potential interference to ISM band of the addition of 90 and 100 MHZ channel bandwidth to Band n40.

**Discussion:**

See email discussion summary for [97e][124] NR\_bands\_R17\_BWs in R4-2016626.

**Decision:** The document was **noted**.

##### 10.21.2.3 others [NR\_bands\_R17\_BWs -Core]

#### 10.21.3 BS RF requirement [NR\_bands\_R17\_BWs -Core]

**R4-2015294 draftCR to 38104 to add 40MHz BW for band n80**

*Type: draftCR For: Endorsement  
 38.104 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR is to introduce 40MHz channel bandwidths for band n80.

**Discussion:**

See email discussion summary for [97e][124] NR\_bands\_R17\_BWs in R4-2016626.

**Decision:** The document was **endorsed**.

**R4-2015295 draftCR to 38104 to add 40MHz BW for band n83**

*Type: draftCR For: Endorsement  
 38.104 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR is to introduce 40MHz channel bandwidth for band n83.

**Discussion:**

See email discussion summary for [97e][124] NR\_bands\_R17\_BWs in R4-2016626.

**Decision:** The document was **endorsed**.

**R4-2015298 draftCR to 38104 to add 90MHz BW for band n40**

*Type: draftCR For: Endorsement  
 38.104 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR is to introduce 90MHz channel bandwidth for band n40.

**Discussion:**

See email discussion summary for [97e][124] NR\_bands\_R17\_BWs in R4-2016626.

**Decision:** The document was **not pursued**.

### 10.22 Introduction of channel bandwidths 35MHz and 45MHz for NR [NR\_FR1\_35MHz\_45MHz\_BW]

**R4-2016627 Email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][125] NR\_FR1\_35MHz\_45MHz\_BW. The subject for discussion was introduction of channel bandwidths 35MHz and 45MHz for NR. The email thread was moderated by Liehai Liu (Huawei Tech.(UK) Co., Ltd) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016967**.

**R4-2016967 Email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2016627)

**Discussion:**

The contribution summarized email discussion thread [97e][125] NR\_FR1\_35MHz\_45MHz\_BW. The subject for discussion was introduction of channel bandwidths 35MHz and 45MHz for NR. The email thread was moderated by Liehai Liu (Huawei Tech.(UK) Co., Ltd) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016862 WF on release independence for 35 MHz and 45 MHz**

*Type: other For: discussion  
 Source: T-Mobile USA*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **approved**.

**R4-2016863 WF on general aspects for UE RF requirements**

*Type: other For: discussion  
 Source: Skyworks*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **approved**.

**R4-2016864 WF on UE REFSENS and A-MPR for 35MHz and 45MHz CBW**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **approved**.

**R4-2016865 WF on BS RF requirements**

*Type: other For: discussion  
 Source: ZTE*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **approved**.

**R4-2017814 LS to RAN2 on 35 and 45 MHz channel bandwidths**

*Type: LS out For: Approval  
 to RAN2  
 Source: T-Mobile USA*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **revised to R4-2017846**.

**R4-2017846 LS to RAN2 on 35 and 45 MHz channel bandwidths**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

(Replaces R4-2017814)

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **approved**.

**R4-2016452 35 and 45 MHz CH BW Release Independence**

*Type: discussion For: Approval  
 Source: T-Mobile USA, TELUS, Bell Mobility, AT&T*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

#### 10.22.1 General and Rapporteur Input (WID/TR/CR) [NR\_FR1\_35MHz\_45MHz\_BW-Core/Per]

**R4-2015701 Discussion on release independence**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2016113 Discussion on release independent and signalling for brand new channel bandwidth**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

#### 10.22.2 Spectrum utilization [NR\_FR1\_35MHz\_45MHz\_BW-Core]

**R4-2015043 Further discussion on spectrum utilization for 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

#### 10.22.3 UE RF requirements [NR\_FR1\_35MHz\_45MHz\_BW-Core]

**R4-2014173 35M\_45M AMPR, MPR, REFSENS**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **revised to R4-2016600**.

**R4-2016600 35M\_45M AMPR, MPR, REFSENS**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Qualcomm Incorporated*

(Replaces R4-2014173)

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2015044 On UE RF requirement for new channel bandwidth of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2015351 Release independence for 35MHz and 45Mhz BW**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2015432 REFSENS of n3, n8, n25 and n71 for new channel bandwidth**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Murata Manufacturing Co Ltd.*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2015702 Draft CR for TS 38.101: introduction of channel bandwidths 35MHz and 45MHz for general part**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of channel bandwidths 35MHz and 45MHz for general part

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **not pursued**.

**R4-2015800 Specification impact of additional 35**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution, we discuss the technical issues, specification impact, UE capability and release independence aspects for single CC and band combination support related to 35 and 45 MHz new channel BW.

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2015801 Specification impact of additional 35&45MHz channel bandwidths**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution, we discuss the technical issues, specification impact, UE capability and release independence aspects for single CC and band combination support related to 35 and 45 MHz new channel BW.

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **withdrawn**.

**R4-2016010 n71 35MHz AMPR and MSD Measurements**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2016011 n8 35MHz AMPR and MSD Measurements**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2016027 n7 35MHz AMPR and MSD Measurements**

*Type: discussion For: Discussion  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2016059 Draft CR to add 35MHz and 45 MHz Bandwidth to TS38.101-1**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: Ericsson*

**Abstract:**

Adding 35MHz and 45 MHz Bandwidth to TS38.101-1 in clauses 5 and 6.

This CR does not change clases containing CA, DC combinations sice RAN4 have not concluded how to cater for these new BWs when it comes to band combinations.

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **not pursued**.

**R4-2016060 Introduction of 35MHz and 45MHz regarding CA, DC, V2x combinations**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

The papers lists remaining CA, DC, V2X clauses that needs to be updated in 38.101-1 and -3. And proposes not to add new BCS per default for new BWs

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2016295 Introduction of 35 MHz for n8, n66, n71 and 45 MHz for n66**

*Type: discussion For: Approval  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2014186 REFSENS of n8 and n71 for new channel bandwidth**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: MediaTek Inc.*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

#### 10.22.4 BS RF requirements [NR\_FR1\_35MHz\_45MHz\_BW-Core]

**R4-2015703 CR for TS 38.104: draft CR on introduction of channel bandwidths 35MHz and 45MHz for BS TX and general part**

*Type: draftCR For: Endorsement  
 38.104 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of channel bandwidths 35MHz and 45MHz for BS TX and general part

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **not pursued**.

**R4-2016866 CR for TS 38.104: draft CR on introduction of channel bandwidths 35MHz and 45MHz for BS TX and general part**

*Type: draftCR For: Endorsement  
 38.104 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015703)

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **withdrawn**.

**R4-2015718 Draft CR to TS 38.104: Introduction of CBWs 35 MHz and 45 MHz**

*Type: draftCR For: Endorsement  
 38.104 v16.5.0  
 Source: Ericsson*

**Abstract:**

Including BS RF requirements for 35/45 MHz

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **not pursued**.

**R4-2015719 Draft CR to TS 38.141-1: Introduction of CBWs 35 MHz and 45 MHz**

*Type: draftCR For: Endorsement  
 38.141-1 v16.5.0  
 Source: Ericsson*

**Abstract:**

Including BS RF requirements for 35/45 MHz

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **not pursued**.

**R4-2016867 Draft CR to TS 38.141-1: Introduction of CBWs 35 MHz and 45 MHz**

*Type: draftCR For: Endorsement  
 38.141-1 v16.5.0  
 Source: Ericsson*

(Replaces R4-2015719)

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **withdrawn**.

**R4-2015720 Draft CR to TS 38.141-2: Introduction of CBWs 35 MHz and 45 MHz**

*Type: draftCR For: Endorsement  
 38.141-2 v16.5.0  
 Source: Ericsson*

**Abstract:**

Including BS RF requirements for 35/45 MHz

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **not pursued**.

**R4-2016114 Discussion on BS RF requirement for new channel bandwidth of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2016115 Draft CR to TS 38.104: Introduction of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2016116 Draft CR to TS 38.141-1: Introduction of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

**R4-2016117 Draft CR to TS 38.141-2: Introduction of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **not pursued**.

**R4-2016868 Draft CR to TS 38.141-2: Introduction of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

(Replaces R4-2016117)

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **withdrawn**.

**R4-2016118 Draft CR to TS 37.104: Introduction of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **not pursued**.

**R4-2016119 Draft CR to 37.141: Introduction of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **not pursued**.

**R4-2016120 Draft CR to TS 37.105: Introduction of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **not pursued**.

**R4-2016121 Draft CR to 37.145-1: Introduction of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **not pursued**.

**R4-2016122 Draft CR to 37.145-2: Introduction of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **not pursued**.

#### 10.22.5 Others [NR\_FR1\_35MHz\_45MHz\_BW-Core]

**R4-2014911 UE RF requirments tables with channel BW dependency**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW in R4-2016627.

**Decision:** The document was **noted**.

### 10.23 Band combinations for Uu and V2X con-current operation [NR\_LTE\_V2X\_PC5\_combos]

**R4-2016628 Email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos**

*Type: other For: discussion  
 Source: Moderator (CATT)*

**Discussion:**

The contribution summarized email discussion thread [97e][126] NR\_LTE\_V2X\_PC5\_combos. The subject for discussion was Band combinations for Uu and V2X con-current operation. The email thread was moderated by Yuan Gao (Morningcore Technology Co.,Ltd) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016968**.

**R4-2016968 Email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos**

*Type: other For: discussion  
 Source: Moderator (CATT)*

(Replaces R4-2016628)

**Discussion:**

The contribution summarized email discussion thread [97e][126] NR\_LTE\_V2X\_PC5\_combos. The subject for discussion was Band combinations for Uu and V2X con-current operation. The email thread was moderated by Yuan Gao (Morningcore Technology Co.,Ltd) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016869 WF on band combinations for V2X con-current operation**

*Type: other For: discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos in R4-2016628.

**Decision:** The document was **approved**.

#### 10.23.1 General and Rapporteur Input (WID/TR/CR) [NR\_LTE\_V2X\_PC5\_combos-Core/Per]

**R4-2014421 Discussion on Rel-17 band combinations for Uu and V2X con-current operation**

*Type: discussion For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos in R4-2016628.

**Decision:** The document was **noted**.

**R4-2014425 Revised WID for V2X band combination**

*Type: WID revised For: Approval  
 Source: CATT*

**Discussion:**

Chair: it is not clear what is revised compared to the last version of WID?

See email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos in R4-2016628.

The document was subject for email agreement after the meeting.

**Decision:** The document was **withdrawn**.

**R4-2015561 TP for TR 37.875: adding some UE RF study for NR V2X band combinations**

*Type: pCR For: Approval  
 37.875 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos in R4-2016628.

**Decision:** The document was **revised to R4-2016870**.

**R4-2016870 TP for TR 37.875: adding some UE RF study for NR V2X band combinations**

*Type: pCR For: Approval  
 37.875 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015561)

**Discussion:**

See email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos in R4-2016628.

**Decision:** The document was **revised to R4-2017829**.

**R4-2017829 TP for TR 37.875: adding some UE RF study for NR V2X band combinations**

*Type: pCR For: Approval  
 37.875 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2016870)

**Discussion:**

See email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos in R4-2016628.

**Decision:** The document was **approved**.

#### 10.23.2 UE RF requirement for concurrent operation between NR Uu band and NR PC5 band [NR\_LTE\_V2X\_PC5\_combos-Core]

**R4-2014422 TP on V2X\_n40A-n47A coexistence study**

*Type: pCR For: Approval  
 37.875 v0.0.0  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos in R4-2016628.

**Decision:** The document was **revised to R4-2016871**.

**R4-2016871 TP on V2X\_n40A-n47A coexistence study**

*Type: pCR For: Approval  
 37.875 v0.0.0  
 Source: CATT*

(Replaces R4-2014422)

**Discussion:**

See email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos in R4-2016628.

**Decision:** The document was **approved**.

**R4-2014423 CR for TS 38.101-1, Introduce new band combination of V2X\_n39A-n47A and V2X\_n40A-n47A**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0503 Cat: B (Rel-17)  
  
 Source: CATT*

**Abstract:**

The con-current operation of V2X\_n39A-n47A and V2X\_n40A-n47A should be introduced based on request.

**Discussion:**

See email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos in R4-2016628.

**Decision:** The document was **revised to R4-2016872**.

**R4-2016872 CR for TS 38.101-1, Introduce new band combination of V2X\_n39A-n47A and V2X\_n40A-n47A**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0503 rev 1 Cat: B (Rel-17)  
  
 Source: CATT*

(Replaces R4-2014423)

**Discussion:**

See email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos in R4-2016628.

**Decision:** The document was **agreed**.

#### 10.23.3 UE RF requirement for concurrent operation between LTE Uu band and NR PC5 band [NR\_LTE\_V2X\_PC5\_combos-Core]

**R4-2014424 CR for TS 38.101-3, Introduce new band combination of V2X\_39A-n47A, V2X\_n39A-47A, V2X\_40A-n47A and V2X\_n40A-47A**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0365 Cat: B (Rel-17)  
  
 Source: CATT*

**Abstract:**

The con-current operation of V2X\_39A-n47A, V2X\_n39A-47A, V2X\_40A-n47A and V2X\_n40A-47A should be introduced based on request.

**Discussion:**

See email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos in R4-2016628.

**Decision:** The document was **revised to R4-2016873**.

**R4-2016873 CR for TS 38.101-3, Introduce new band combination of V2X\_39A-n47A, V2X\_n39A-47A, V2X\_40A-n47A and V2X\_n40A-47A**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0365 rev 1 Cat: B (Rel-17)  
  
 Source: CATT*

(Replaces R4-2014424)

**Discussion:**

See email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos in R4-2016628.

**Decision:** The document was **agreed**.

#### 10.23.4 UE RF requirement for concurrent operation between NR Uu band and LTE PC5 band [NR\_LTE\_V2X\_PC5\_combos-Core]

#### 10.23.5 UE RF requirement for concurrent operation of LTE/NR CA/DC band combinations + PC5 V2X [NR\_LTE\_V2X\_PC5\_combos-Core]

### 10.24 Introduction of FR2 FWA UE with maximum TRP of 23dBm for band n257 and n258 [NR\_FR2\_FWA\_Bn257\_Bn258]

#### 10.24.1 UE RF (38.101-2) [NR\_FR2\_FWA\_Bn257\_Bn258-Core]

**R4-2016629 Email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258**

*Type: other For: discussion  
 Source: Moderator (Softbank)*

**Discussion:**

The contribution summarized email discussion thread [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258. The subject for discussion was Introduction of FR2 FWA UE with maximum TRP of 23dBm for band n257 and n258. The email thread was moderated by Masashi Fushiki (SoftBank Corp.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016969**.

**R4-2016969 Email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258**

*Type: other For: discussion  
 Source: Moderator (Softbank)*

(Replaces R4-2016629)

**Discussion:**

The contribution summarized email discussion thread [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258. The subject for discussion was Introduction of FR2 FWA UE with maximum TRP of 23dBm for band n257 and n258. The email thread was moderated by Masashi Fushiki (SoftBank Corp.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016874 WF on FR2 FWA RF requirements**

*Type: other For: discussion  
 Source: Softbank*

**Discussion:**

See email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 in R4-2016629.

**Decision:** The document was **approved**.

**R4-2016875 CR for FR2 FWA RF requirements**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0309 Cat: B (Rel-17)  
  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 in R4-2016629.

**Decision:** The document was **not pursued**.

**R4-2017834 CR for FR2 FWA RF requirements**

*Type: CR For: Agreement  
 Source: Huawei*

**Decision:** The document was **withdrawn**.

**R4-2016876 LS for FR2 FWA power class**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

**Discussion:**

See email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 in R4-2016629.

**Decision:** The document was **approved**.

**R4-2014264 On Japan FWA EIRP requirement**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

PC5 is more performance oriented than PC3, so EIRP requirement can support higher levels.

**Discussion:**

See email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 in R4-2016629.

**Decision:** The document was **noted**.

**R4-2014826 Proposals on FR2 FWA UE with maximum TRP of 23dBm**

*Type: report For: (not specified)  
 Source: MediaTek Beijing Inc.*

**Abstract:**

Proposal1: n257 and n258 Peak EIRP is 28.4 dBm for FR2 FWA UE with maximum TRP of 23dBm.

Proposal2.a: n257 REFSENS for 50MHz channel BW is -92.5 dBm for FR2 FWA UE with maximum TRP of 23dBm.

Proposal2.b: n258 REFSENS for 50MHz channel BW is -92.6 dBm for

**Discussion:**

See email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 in R4-2016629.

**Decision:** The document was **withdrawn**.

**R4-2014832 Proposals on FR2 FWA UE with maximum TRP of 23dBm**

*Type: discussion For: Approval  
 Source: MediaTek Beijing Inc.*

**Abstract:**

Proposal1: n257 and n258 Peak EIRP is 28.4 dBm for FR2 FWA UE with maximum TRP of 23dBm.

Proposal2.a: n257 REFSENS for 50MHz channel BW is -92.5 dBm for FR2 FWA UE with maximum TRP of 23dBm.

Proposal2.b: n258 REFSENS for 50MHz channel BW is -92.6 dBm for

**Discussion:**

See email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 in R4-2016629.

**Decision:** The document was **noted**.

**R4-2015085 Open issues on FR2 FWA UE RF requirement**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 in R4-2016629.

**Decision:** The document was **noted**.

**R4-2015347 Discussion on Rel-17 FWA**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 in R4-2016629.

**Decision:** The document was **noted**.

**R4-2015809 Views on RF requirement for FWA**

*Type: other For: Approval  
 Source: Sony, Ericsson*

**Discussion:**

See email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 in R4-2016629.

**Decision:** The document was **noted**.

**R4-2015887 Views on UE RF requirements of new FWA with 23dBm maximum TRP**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 in R4-2016629.

**Decision:** The document was **noted**.

**R4-2016529 on new FR2 FWA UE RF requirement**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 in R4-2016629.

**Decision:** The document was **noted**.

**R4-2016530 Draft CR for FR2 FWA RF requirements**

*Type: draftCR For: Endorsement  
 38.101-2 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Power class 5 is introduced in Rel-17 for FWA usage.

**Discussion:**

See email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 in R4-2016629.

**Decision:** The document was **not pursued**.

#### 10.24.2 RRM Core requirements (38.133) [NR\_FR2\_FWA\_Bn257\_Bn258-Core]

**R4-2017027 Email discussion summary for [97e][228] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][228] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The email thread was moderated by Li Hong (HiSilicon Technologies Co. Ltd) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017298**.

**R4-2017298 Email discussion summary for [97e][228] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM**

*Type: other For: Discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2017027)

**Discussion:**

The contribution summarized email discussion thread [97e][228] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The email thread was moderated by Li Hong (HiSilicon Technologies Co. Ltd) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

**R4-2016178 Big CR on FR2 new FWA UE RRM requirements in 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6994 Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

To specify inter-RAT RRM requirements for FR2 FWA UE power class.

**Discussion:**

See email discussion summary for [97e][228] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM in R4-2017027.

**Decision:** The document was **revised to R4-2017262**.

**R4-2017262 Big CR on FR2 new FWA UE RRM requirements in TS 36.133**

*Type: CR For: Agreement  
 36.133 v16.7.0 CR-6994 rev 1 Cat: B (Rel-17)  
  
 Source: Ericsson*

(Replaces R4-2016178)

**Discussion:**

See email discussion summary for [97e][228] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM in R4-2017027.

**Decision:** The document was **agreed**.

**R4-2017264 Big CR: NR FR2 new FWA UE RRM requirements (TS 38.133)**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1412 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2015480 DraftCR on RRM core requirements for FR2 new FWA UE in 38.133**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Based on the endorsed document [R4-2012200] in RAN4#96-e meeting, the RRM requirements for new FR2 FWA UE need to be specified in TS38.133.

**Discussion:**

See email discussion summary for [97e][228] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM in R4-2017027.

**Decision:** The document was **revised to R4-2017261**.

**R4-2017261 DraftCR on RRM core requirements for FR2 new FWA UE in 38.133**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015480)

**Discussion:**

See email discussion summary for [97e][228] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM in R4-2017027.

**Decision:** The document was **endorsed**.

#### 10.24.3 RRM Perf. requirements (38.133) [NR\_FR2\_FWA\_Bn257\_Bn258-Perf]

**R4-2015481 DraftCR on RRM performance requirements for FR2 new FWA UE in 38.133**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Based on the agreements in [R4-2012199] in RAN4#96-e meeting, it has been obseved that the side condition, UE gain range and test directions for FR2 RRM tests need to be introduced for FR2 new FWA UE.

**Discussion:**

See email discussion summary for [97e][228] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM in R4-2017027.

**Decision:** The document was **revised to R4-2017263**.

**R4-2017263 DraftCR on RRM performance requirements for FR2 new FWA UE in 38.133**

*Type: draftCR For: Endorsement  
 38.133 v16.5.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015481)

**Discussion:**

See email discussion summary for [97e][228] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM in R4-2017027.

**Decision:** The document was **endorsed**.

#### 10.24.4 Others [NR\_FR2\_FWA\_Bn257\_Bn258-Core/Perf]

### 10.25 Introduction of NR band n13 [NR\_n13]

**R4-2016630 Email discussion summary for [97e][128] NR\_n13**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][128] NR\_n13. The subject for discussion was Introduction of NR band n13. The email thread was moderated by Liehai Liu (HUAWEI TECH. GmbH) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016970**.

**R4-2016970 Email discussion summary for [97e][128] NR\_n13**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2016630)

**Discussion:**

The contribution summarized email discussion thread [97e][128] NR\_n13. The subject for discussion was Introduction of NR band n13. The email thread was moderated by Liehai Liu (HUAWEI TECH. GmbH) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016877 WF on A-MPR for NS\_07**

*Type: other For: discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **withdrawn**.

#### 10.25.1 UE RF (38.101-1) [NR\_n13-Core]

**R4-2014902 A-MPR Proposal for n13**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **noted**.

**R4-2015682 CR to TS 38.101-1: introduction of NR band n13**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0543 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of NR band n13 in TS 38.101-1.

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **revised to R4-2016878**.

**R4-2016878 CR to TS 38.101-1: introduction of NR band n13**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0543 rev 1 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2015682)

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **agreed**.

#### 10.25.2 BS RF (38.104) [NR\_n13-Core]

**R4-2015684 CR to TS 38.104: introduction of NR band n13**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0253 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of NR band n13 in TS 38.104

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **agreed**.

**R4-2015685 CR to TS 38.141-1: introduction of NR band n13**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0164 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of NR band n13 in TS 38.141-1

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **agreed**.

**R4-2015686 CR to TS 38.141-2: introduction of NR band n13**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0241 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of NR band n13 in TS 38.141-2

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **agreed**.

**R4-2015687 CR to TS 36.104: introduction of NR band n13**

*Type: CR For: Agreement  
 36.104 v16.7.0 CR-4916 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of NR band n13 in TS 36.104

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **agreed**.

**R4-2015688 CR to TS 36.141: introduction of NR band n13**

*Type: CR For: Agreement  
 36.141 v16.7.0 CR-1285 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of NR band n13 in TS 36.141

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **agreed**.

**R4-2015689 CR to TS 37.104: introduction of NR band n13**

*Type: CR For: Agreement  
 37.104 v16.7.0 CR-0911 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of NR band n13 in TS 37.104

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **agreed**.

**R4-2015690 CR to TS 37.141: introduction of NR band n13**

*Type: CR For: Agreement  
 37.141 v16.7.0 CR-0952 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of NR band n13 in TS 37.141

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **agreed**.

**R4-2015691 CR to TS 37.105: introduction of NR band n13**

*Type: CR For: Agreement  
 37.105 v16.5.0 CR-0203 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of NR band n13 in TS 37.105

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **agreed**.

**R4-2015692 CR to TS 37.145-1: introduction of NR band n13**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0220 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of NR band n13 in TS 37.145-1

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **agreed**.

**R4-2015693 CR to TS 37.145-2: introduction of NR band n13**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0245 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of NR band n13 in TS 37.145-2

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **agreed**.

#### 10.25.3 RRM (38.133) [NR\_n13-Core]

**R4-2015683 CR to TS 38.133: introduction of NR band n13**

*Type: CR For: Agreement  
 38.133 v16.5.0 CR-1313 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of NR band n13 in TS 38.133

**Discussion:**

See email discussion summary for [97e][128] NR\_n13 in R4-2016630.

**Decision:** The document was **agreed**.

#### 10.25.4 Others [NR\_n13-Core/Perf]

### 10.26 Introduction of 1880-1920MHz SUL band for NR [NR\_SUL\_band\_1880\_1920MHz]

**R4-2016631 Email discussion summary for [97e][129] NR\_SUL\_bands**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

**Discussion:**

The contribution summarized email discussion thread [97e][129] NR\_SUL\_bands. The email thread was moderated by Zhe Shao (China Mobile Group Device Co.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

#### 10.26.1 UE RF (38.101-1) [NR\_SUL\_band\_1880\_1920MHz-Core]

**R4-2014330 Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0499 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 1880-1920MHz SUL band for NR into Rel-17 TS 38.101-1

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2015290 Discussion on new SUL band n98 UE requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **noted**.

#### 10.26.2 BS RF (38.104) [NR\_SUL\_band\_1880\_1920MHz -Core]

**R4-2014331 Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.104**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0240 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014332 Introduction of 1880-1920MHz SUL band into Rel-16 TS 36.104**

*Type: CR For: Agreement  
 36.104 v16.7.0 CR-4912 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014333 Introduction of 1880-1920MHz SUL band into Rel-17 TS 36.141**

*Type: CR For: Agreement  
 36.141 v16.7.0 CR-1274 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014334 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.104**

*Type: CR For: Agreement  
 37.104 v16.7.0 CR-0908 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014335 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.105**

*Type: CR For: Agreement  
 37.105 v16.5.0 CR-0200 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014336 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.141**

*Type: CR For: Agreement  
 37.141 v16.7.0 CR-0949 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014337 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-1**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0217 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014338 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-2**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0242 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014339 Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-1**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0151 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014340 Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-2**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0223 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2015291 Discussion on new SUL band n98 BS requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **noted**.

#### 10.26.3 RRM (38.133) [NR\_SUL\_band\_1880\_1920MHz -Core]

#### 10.26.4 Others [NR\_SUL\_band\_1880\_1920MHz -Core/Perf]

### 10.27 Introduction of 2300-2400MHz SUL band for NR [NR\_SUL\_band\_2300\_2400MHz]

#### 10.27.1 UE RF (38.101-1) [NR\_SUL\_band\_2300\_2400MHz -Core]

**R4-2014341 introduction of 2300-2400MHz SUL band into Rel-17 TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0500 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 2300-2400MHz SUL band for NR into Rel-17 TS 38.101-1

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2015288 Discussion on new SUL band n97 UE requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **noted**.

#### 10.27.2 BS RF (38.104) [NR\_SUL\_band\_2300\_2400MHz -Core]

**R4-2014342 Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.104**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0241 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014343 Introduction of 2300-2400MHz SUL band into Rel-16 TS 36.104**

*Type: CR For: Agreement  
 36.104 v16.7.0 CR-4913 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014344 Introduction of 2300-2400MHz SUL band into Rel-17 TS 36.141**

*Type: CR For: Agreement  
 36.141 v16.7.0 CR-1275 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014345 Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.104**

*Type: CR For: Agreement  
 37.104 v16.7.0 CR-0909 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014346 Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.105**

*Type: CR For: Agreement  
 37.105 v16.5.0 CR-0201 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014347 Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.141**

*Type: CR For: Agreement  
 37.141 v16.7.0 CR-0950 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014348 Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-1**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0218 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014349 Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-2**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0243 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014350 Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-1**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0152 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2014351 Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-2**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0224 Cat: B (Rel-17)  
  
 Source: CMCCCMCC, Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **withdrawn**.

**R4-2014355 Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-2**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0225 Cat: B (Rel-17)  
  
 Source: CMCC, Huawei, HiSilicon*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **agreed**.

**R4-2015289 Discussion on new SUL band n97 BS requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][129] NR\_SUL\_bands in R4-2016631.

**Decision:** The document was **noted**.

#### 10.27.3 RRM (38.133) [NR\_SUL\_band\_2300\_2400MHz -Core]

#### 10.27.4 Others [NR\_SUL\_band\_2300\_2400MHz -Core/Perf]

### 10.28 Introduction of NR 47 GHz band [NR\_47GHz\_Band]

**R4-2016632 Email discussion summary for [97e][130] NR\_47GHz\_Band**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [97e][130] NR\_47GHz\_Band. The email thread was moderated by Hisashi Onozawa (Nokia Japan) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016971**.

**R4-2016971 Email discussion summary for [97e][130] NR\_47GHz\_Band**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2016632)

**Discussion:**

The contribution summarized email discussion thread [97e][130] NR\_47GHz\_Band. The email thread was moderated by Hisashi Onozawa (Nokia Japan) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016879 WF on UE RF requirement of n262**

*Type: other For: discussion  
 Source: Qualcomm, Nokia, Sony*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

GTW Session (Main) 13-11-2020

Apple had concerns with the contribution. Samsung wondered why Apple did not provide comments on the draft document as discussed in the email thread [97e][130].

**Decision:** The document was **approved**.

**R4-2016880 WF on multi-band relaxation of n262**

*Type: other For: discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **approved**.

**R4-2016881 WF on BS MU/TT for n262**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **approved**.

**R4-2016461 Revised WID: introduction of NR 47 GHz band**

*Type: WID revised For: Information  
 Source: T-Mobile USA, Dish Network*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **noted**.

#### 10.28.1 UE RF (38.101-2) [NR\_47GHz\_Band -Core]

**R4-2014263 Discussion on PC3 EIRP and EIS in n262**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

peak gain, spherical coverage of gain discussed

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **noted**.

**R4-2015084 UE RF requirements for NR band n262**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **noted**.

**R4-2015855 Link budget for PC3 for n262**

*Type: other For: Approval  
 Source: Sony, Ericsson*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **noted**.

**R4-2015888 PC3 minimum peak EIRP and EIS requirements for band n262**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **noted**.

**R4-2015894 Link budget for PC3 for n262**

*Type: other For: Approval  
 Source: Sony, Ericsson*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **withdrawn**.

**R4-2015896 Link budget for PC3 for n262**

*Type: other For: Approval  
 Source: Sony, Ericsson*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **withdrawn**.

**R4-2016229 EIRP and EIS evaluation for band n262**

*Type: discussion For: Approval  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **noted**.

**R4-2016296 Peak EIRP and Peak EIS for band n262**

*Type: discussion For: Approval  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **noted**.

#### 10.28.2 BS RF (38.104) [NR\_47GHz\_Band -Core]

**R4-2015903 Draft CR to TS 38.104**

*Type: draftCR For: Endorsement  
 38.104 v16.5.0  
 Source: Ericsson*

**Abstract:**

Add band n262

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **revised to R4-2016882**.

**R4-2016882 Draft CR to TS 38.104**

*Type: draftCR For: Endorsement  
 38.104 v16.5.0  
 Source: Ericsson, Nokia, Nokia Shanghai Bell*

(Replaces R4-2015903)

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **endorsed**.

**R4-2015904 BS RF requirements and system parameters - TP to TR 38.847**

*Type: pCR For: Approval  
 38.847 v0.0.1  
 Source: Ericsson*

**Abstract:**

This contriobution is a text proposal to TR 38.847 to capture the RAN4#96-e agrements on BS RF requirements and system parameters

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **revised to R4-2016883**.

**R4-2016883 BS RF requirements and system parameters - TP to TR 38.847**

*Type: pCR For: Approval  
 38.847 v0.0.1  
 Source: Ericsson*

(Replaces R4-2015904)

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **approved**.

**R4-2016155 47GHz band TT for NR BS RF requirement**

*Type: discussion For: Agreement  
 Source: Keysight Technologies UK Ltd*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **noted**.

**R4-2016191 TP to TR 38.847: BS RF requirements**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **revised to R4-2016884**.

**R4-2016884 TP to TR 38.847: BS RF requirements**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016191)

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **approved**.

#### 10.28.3 RRM (38.133) [NR\_47GHz\_Band -Core]

**R4-2016179 Analysis of RRM requirements for 47 GHz band**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This document analysis RRM requirements for new band on 47 GHz

**Discussion:**

Proposal 1: Band group for n262 in clause 3.5, TS 38.133 will be defined after RF group has agreed the REFSENS values for corresponding UE power classes for band n262.

Proposal 2: Minimum signal levels (e.g. SSB\_RP) in the conditions in clauses B.1-B.2, TS 38.133 will be defined after RF group has agreed the REFSENS values for corresponding UE power classes for band n262.

Proposal 3: Impact of minimum signals (e.g. min SSB\_RP level) on the existing RRM measurement accuracy tests can be assessed once conditions on the minimum levels is finalized.

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **noted**.

#### 10.28.4 Others [NR\_47GHz\_Band -Core/Perf]

**R4-2015083 TP to TR 38.847 on regulatory background and system parameters**

*Type: pCR For: Approval  
 38.847 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **noted**.

**R4-2015902 TR 38.847 Introduction of NR Band 262 (47Ghz band)**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

TR skeleton to capture the work done when specifying the new NR FR2 47GHz band

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **agreed**.

**R4-2016096 Simulation results on UE demodulation performance impact by the introduction of NR 47GHz band**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This paper provides UE simulation results for 47GHz FR2 band

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **noted**.

**R4-2016097 On demodulation requirements for the new 47GHz band**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper provides an overview of demodulation requirements for the new 47GHz band

**Discussion:**

See email discussion summary for [97e][130] NR\_47GHz\_Band in R4-2016632.

**Decision:** The document was **noted**.

### 10.29 Introduction of NR band n24 [NR\_band\_n24]

**R4-2016633 Email discussion summary for [97e][131] NR\_LTE\_band\_n24**

*Type: other For: discussion  
 Source: Moderator (Ligado Networks)*

**Discussion:**

The contribution summarized email discussion thread [97e][131] NR\_LTE\_band\_n24. The email thread was moderated by Ojas Choksi (Ligado Networks) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016972**.

**R4-2016972 Email discussion summary for [97e][131] NR\_LTE\_band\_n24**

*Type: other For: discussion  
 Source: Moderator (Ligado Networks)*

(Replaces R4-2016633)

**Discussion:**

The contribution summarized email discussion thread [97e][131] NR\_LTE\_band\_n24. The email thread was moderated by Ojas Choksi (Ligado Networks) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016896 WF on work items LTE\_B24\_mod and NR\_band\_n24**

*Type: other For: discussion  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **approved**.

**R4-2016897 WF on work item NR\_SUL\_UL\_n24)**

*Type: other For: discussion  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **approved**.

#### 10.29.1 UE RF (38.101-1) [NR\_band\_n24-Core]

**R4-2014466 n24 emission requirements and A-MPR assumptions**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **noted**.

**R4-2014495 Band 24 and n24 A-MPR**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution we provide our input on filter feasibility, A-MPR evaluation assumptions and preliminary back-off measurements for NR FDD and SUL Band n24 that is also relevant to LTE Band 24.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **noted**.

#### 10.29.2 BS RF (38.104) [NR\_band\_n24-Core]

**R4-2016192 Draft CR to 36.104: Introduction of n24 requirements**

*Type: draftCR For: Endorsement  
 36.104 v16.7.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction on n24 requirements.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2016193 Draft CR to 36.141: Introduction of n24 requirements**

*Type: draftCR For: Endorsement  
 36.141 v16.7.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction on n24 requirements.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2016194 Draft CR to 37.104: Introduction of n24 requirements**

*Type: draftCR For: Endorsement  
 37.104 v16.7.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction on n24 requirements.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2016195 Draft CR to 37.141: Introduction of n24 requirements**

*Type: draftCR For: Endorsement  
 37.141 v16.7.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction on n24 requirements.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2016196 Draft CR to 38.104: Introduction of n24**

*Type: draftCR For: Endorsement  
 38.104 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction on n24.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016895**.

**R4-2016895 Draft CR to 38.104: Introduction of n24**

*Type: draftCR For: Endorsement  
 38.104 v16.5.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016196)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

#### 10.29.3 RRM (38.133) [NR\_band\_n24-Core]

#### 10.29.4 Others [NR\_band\_n24-Core/Perf]

**R4-2014176 Draft CR for 37.105 Introduction of NR band n24**

*Type: draftCR For: Endorsement  
 37.105 v16.5.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of NR band n24 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014177 Draft CR for 37.145-1 Introduction of NR band n24**

*Type: draftCR For: Endorsement  
 37.145-1 v16.4.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of NR band n24 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016892**.

**R4-2016892 Draft CR for 37.145-1 Introduction of NR band n24**

*Type: draftCR For: Endorsement  
 37.145-1 v16.4.0  
 Source: Ligado Networks*

(Replaces R4-2014177)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014178 Draft CR for 37.145-2 Introduction of NR band n24**

*Type: draftCR For: Endorsement  
 37.145-2 v16.5.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of NR band n24 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014179 Draft CR for 38.141-1 Introduction of NR band n24**

*Type: draftCR For: Endorsement  
 38.141-1 v16.5.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of NR band n24 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016893**.

**R4-2016893 Draft CR for 38.141-1 Introduction of NR band n24**

*Type: draftCR For: Endorsement  
 38.141-1 v16.5.0  
 Source: Ligado Networks*

(Replaces R4-2014179)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014180 Draft CR for 38.141-2 Introduction of NR band n24**

*Type: draftCR For: Endorsement  
 38.141-2 v16.5.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of NR band n24 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016894**.

**R4-2016894 Draft CR for 38.141-2 Introduction of NR band n24**

*Type: draftCR For: Endorsement  
 38.141-2 v16.5.0  
 Source: Ligado Networks*

(Replaces R4-2014180)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

### 10.30 Introduction of 1.6 GHz NR SUL band with same uplink frequency range of Band 24 [NR\_SUL\_UL\_n24]

**R4-2015356 Discussion on the new SUL band for 1.6GHz**

*Type: discussion For: Approval  
 Source: Huawei,HiSilicon*

**Abstract:**

Proposal 1: Introduce the new SUL band for 1626.5-1660.5MHz as band n99.

Proposal 2: Specify UE RF requirements for the new SUL band for 1626.5-1660.5MHz following band n24.

Proposal 3: Specify BS spurious emissions requirements for the new SUL band fo

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **noted**.

#### 10.30.1 UE RF (38.101-1) [NR\_SUL\_UL\_n24-Core]

**R4-2014468 A-MPR and Emission Requirements for new SUL Band related to the UL of n24**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **noted**.

**R4-2015357 draftCR to 38101-1 on introducing new SUL band n99**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0538 Cat: B (Rel-17)  
  
 Source: Huawei,HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1626.5-1660.5MHz in the UE RF spec.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **not pursued**.

#### 10.30.2 BS RF (38.104) [NR\_SUL\_UL\_n24-Core]

**R4-2014202 Draft CR for TS 38.104 Introduction of SUL for UL of NR band n24**

*Type: draftCR For: Endorsement  
 38.104 v16.5.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of SUL Band n99 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2015358 draftCR to 38104 on introducing new SUL band n99**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0246 Cat: B (Rel-17)  
  
 Source: Huawei,HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1626.5-1660.5MHz in 38.104 spec.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **not pursued**.

**R4-2015359 draftCR to 36104 on introducing new SUL band n99**

*Type: CR For: Agreement  
 36.104 v16.7.0 CR-4914 Cat: B (Rel-17)  
  
 Source: Huawei,HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1626.5-1660.5MHz in 36.104 spec.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **not pursued**.

**R4-2015360 draftCR to 38141-1 on introducing new SUL band n99**

*Type: CR For: Agreement  
 38.141-1 v16.5.0 CR-0159 Cat: B (Rel-17)  
  
 Source: Huawei,HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1626.5-1660.5MHz in 38.141-1 spec.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **not pursued**.

**R4-2015361 draftCR to 38141-2 on introducing new SUL band n96**

*Type: CR For: Agreement  
 38.141-2 v16.5.0 CR-0236 Cat: B (Rel-17)  
  
 Source: Huawei,HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1626.5-1660.5MHz in 38.141-2 spec.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **not pursued**.

**R4-2015362 draftCR to 36141 on introducing new SUL band n99**

*Type: CR For: Agreement  
 36.141 v16.7.0 CR-1283 Cat: B (Rel-17)  
  
 Source: Huawei,HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1626.5-1660.5MHz in 36.141 spec.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **not pursued**.

**R4-2015363 draftCR to 37104 on introducing new SUL band n99**

*Type: CR For: Agreement  
 37.104 v16.7.0 CR-0910 Cat: B (Rel-17)  
  
 Source: Huawei,HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1626.5-1660.5MHz in 37.104 spec.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **not pursued**.

**R4-2015364 draftCR to 37141 on introducing new SUL band n99**

*Type: CR For: Agreement  
 37.141 v16.7.0 CR-0951 Cat: B (Rel-17)  
  
 Source: Huawei,HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1626.5-1660.5MHz in 37.141 spec.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **not pursued**.

**R4-2015365 draftCR to 37105 on introducing new SUL band n99**

*Type: CR For: Agreement  
 37.105 v16.5.0 CR-0202 Cat: B (Rel-17)  
  
 Source: Huawei,HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1626.5-1660.5MHz in 37.105 spec.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **not pursued**.

**R4-2015366 draftCR to 37145-1 on introducing new SUL band n99**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0219 Cat: B (Rel-17)  
  
 Source: Huawei,HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1626.5-1660.5MHz in 37.145-1 spec.

**Discussion:**

The secretary wondered what is the correct Version? It reads 16.5.0 on the coversheet but the CR is allocated for 16.4.0 (and 16.5.0 does not exist). See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **not pursued**.

**R4-2015367 draftCR to 37145-2 on introducing new SUL band n99**

*Type: CR For: Agreement  
 37.145-2 v16.5.0 CR-0244 Cat: B (Rel-17)  
  
 Source: Huawei,HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1626.5-1660.5MHz in 37.145-2 spec.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **not pursued**.

#### 10.30.3 RRM (38.133) [NR\_SUL\_UL\_n24-Core]

#### 10.30.4 Others [NR\_SUL\_UL\_n24-Core/Perf]

**R4-2014203 Draft CR for TS 36.104 Introduction of SUL for UL of NR band n24**

*Type: draftCR For: Endorsement  
 36.104 v16.7.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of SUL Band n99 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014204 Draft CR for TS 36.141 Introduction of SUL for UL of NR band n24**

*Type: draftCR For: Endorsement  
 36.141 v16.7.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of SUL Band n99 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014205 Draft CR for TS 37.104 Introduction of SUL for UL of NR band n24**

*Type: draftCR For: Endorsement  
 37.104 v16.7.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of SUL Band n99 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014206 Draft CR for TS 37.105 Introduction of SUL for UL of NR band n24**

*Type: draftCR For: Endorsement  
 37.105 v16.5.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of SUL Band n99 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016898**.

**R4-2016898 Draft CR for TS 37.105 Introduction of SUL for UL of NR band n24**

*Type: draftCR For: Endorsement  
 37.105 v16.5.0  
 Source: Ligado Networks*

(Replaces R4-2014206)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014207 Draft CR for TS 37.141 Introduction of SUL for UL of NR band n24**

*Type: draftCR For: Endorsement  
 37.141 v16.7.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of SUL Band n99 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016899**.

**R4-2016899 Draft CR for TS 37.141 Introduction of SUL for UL of NR band n24**

*Type: draftCR For: Endorsement  
 37.141 v16.7.0  
 Source: Ligado Networks*

(Replaces R4-2014207)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014208 Draft CR for TS 37.145-1 Introduction of SUL for UL of NR band n24**

*Type: draftCR For: Endorsement  
 37.145-1 v16.4.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of SUL Band n99 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016900**.

**R4-2016900 Draft CR for TS 37.145-1 Introduction of SUL for UL of NR band n24**

*Type: draftCR For: Endorsement  
 37.145-1 v16.4.0  
 Source: Ligado Networks*

(Replaces R4-2014208)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014209 Draft CR for TS 37.145-2 Introduction of SUL for UL of NR band n24**

*Type: draftCR For: Endorsement  
 37.145-2 v16.5.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of SUL Band nXX into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014210 Draft CR for TS 38.141-1 Introduction of SUL for UL of NR band n24**

*Type: draftCR For: Endorsement  
 38.141-1 v16.5.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of SUL Band n99 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014211 Draft CR for TS 38.141-2 Introduction of SUL for UL of NR band n24**

*Type: draftCR For: Endorsement  
 38.141-2 v16.5.0  
 Source: Ligado Networks*

**Abstract:**

Introduction of SUL Band n99 into the specifications

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

## 11 Reply to ITU-R LS (RP-200042)

### 11.1 Study on IMT parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz [FS\_6425\_10500MHz \_NR]

**R4-2016634 Email discussion summary for [97e][132] FS\_6425\_10500MHz \_NR**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][132] FS\_6425\_10500MHz \_NR. The email thread was moderated by Dominique Evereare (Ericsson Limited) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016973**.

**R4-2016973 Email discussion summary for [97e][132] FS\_6425\_10500MHz \_NR**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2016634)

**Discussion:**

The contribution summarized email discussion thread [97e][132] FS\_6425\_10500MHz \_NR. The email thread was moderated by Dominique Evereare (Ericsson Limited) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016904 WF on Coexistence Simulations results for 6.425-7.125 GHz and 10.0-10.5 GHz**

*Type: other For: discussion  
 Source: Huawei, HiSilicon, CATT, Nokia, Ericsson, ZTE*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **approved**.

**R4-2016905 WF on BS and UE parameters for 6.425-7.125 and 10.0-10.5 GHz**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **approved**.

**R4-2015675 TR 38.921 V 0.2.0**

*Type: draft TR For: Agreement  
 38.921 v0.2.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **agreed**.

**R4-2015681 Draft reply LS on Parameters of terrestrial component of IMT for sharing and compatibility studies in preparation for WRC-23 (6.425 to 10.5 GHz)**

*Type: LS out For: Approval  
 to ITU-R WP5D, cc RAN  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2016132 Maintenance TP to TR38.921**

*Type: other For: Approval  
 38.921 v..  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **revised to R4-2016903**.

**R4-2016903 Maintenance TP to TR38.921**

*Type: other For: Approval  
 38.921 v..  
 Source: ZTE Corporation*

(Replaces R4-2016132)

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **approved**.

#### 11.1.1 UE parameters

**R4-2014456 UE parameters for the frequency range 6.425-7.125GHz, 7.025-7.125GHz and 10.0-10.5GHz**

*Type: discussion For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2014473 Proposals of UE Parameters for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution provides the proposals of UE parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz according to the downlink and uplink coexistence simulation results provided.

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2015676 TP on UE IMT technology related parameters**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2015900 SI on IMT parameters - Remaining UE parameters**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution is discussing remaining UE parameters for the SI on IMT parameters

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

#### 11.1.2 BS parameters

**R4-2014457 BS parameters for the frequency range 6.425-7.125GHz, 7.025-7.125GHz and 10.0-10.5GHz**

*Type: discussion For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2014474 Proposals of BS Parameters for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution provides the proposals of BS parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz according to the downlink and uplink coexistence simulation results provided.

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2014738 Discussion on remaining issues for 6425-7125 BS parameter**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2014749 Discussion on remaining issues for 6425-7125 BS parameter**

*Type: discussion For: (not specified)  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2015677 TP on BS remaining parameters**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2015899 SI on IMT parameters - Remaining BS parameters**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution is discussing remaining BS parameters for the SI on IMT parameters

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2016133 TP to TR38.921 : BS spurious emission**

*Type: other For: Approval  
 38.921 v..  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **revised to R4-2016906**.

**R4-2016906 TP to TR38.921 : BS spurious emission**

*Type: other For: Approval  
 38.921 v..  
 Source: ZTE Corporation*

(Replaces R4-2016133)

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **approved**.

**R4-2016369 Draft LS to ECC SE21 on Spurious emission limits for AAS BS in 6.425**

*Type: LS out For: Approval  
 to ECC SE21, cc RAN  
 Source: RAN4*

**Abstract:**

The LS informs SE21 what limits RAN4 intends to choose for operation in frequency range 6.425-7.125 GHz and 10-10-.5 GHz, in its work to respond to ITU-R WP5D on sharing parameters for WRC-23.

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **approved**.

#### 11.1.3 Coexistence study

##### 11.1.3.1 Simulation assumptions

**R4-2014475 TP to TR 38.921: Clarification of system level simulation assumptions for study on IMT parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell, ZTE*

**Abstract:**

This contribution proposes to use the term “cell range” instead of “cell radius” in table 4.2.1.1-1 to align with figure 4.2.1.1-2 and avoid the ambiguity. The text proposal to TR 38.921 is provided below for approval.

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **revised to R4-2016901**.

**R4-2016901 TP to TR 38.921: Clarification of system level simulation assumptions for study on IMT parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell, ZTE*

(Replaces R4-2014475)

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **approved**.

**R4-2015901 SI on IMT parameters - Simulation assumptions**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution is discussing some agreed UE assumptions that were challenged in previous meeting

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

##### 11.1.3.2 Downlink

**R4-2014458 Simulation results for 6425-7125MHz and 10-10.5GHz-downlink**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **revised to R4-2016777**.

**R4-2016777 Simulation results for 6425-7125MHz and 10-10.5GHz-downlink**

*Type: discussion For: Discussion  
 Source: CATT*

(Replaces R4-2014458)

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2014476 Downlink Coexistence Simulation Results for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution provides the downlink coexistence simulation results according to the agreed assumptions.

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2015678 Simulation results on DL co-existence for 6.425-7.125GHz, 10.0-10.5 GHz**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2015897 SI on IMT parameters - DL simulations results**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution is providing coexistence simulations results in DL for the 6-7GHz and 10GHz bands

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2016134 DL simulation results for 6425-7125MHz and 10-10.5GHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2016236 Downlink co-existence simulation results for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: discussion For: (not specified)  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

##### 11.1.3.3 Uplink

**R4-2014459 Simulation results for 6425-7125MHz and 10-10.5GHz-uplink**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **revised to R4-2016778**.

**R4-2016778 Simulation results for 6425-7125MHz and 10-10.5GHz-uplink**

*Type: discussion For: Discussion  
 Source: CATT*

(Replaces R4-2014459)

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2014477 Uplink Coexistence Simulation Results for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution provides the uplink coexistence simulation results according to the agreed assumptions.

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2015679 Simulation results on UL co-existence for 6.425-7.125GHz, 10.0-10.5 GHz**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2015898 SI on IMT parameters - UL simulations results**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution is providing coexistence simulations results in UL for the 6-7GHz and 10GHz bands

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2016135 UL simulation results for 6425-7125MHz and 10-10.5GHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2016136 TP to TR38.921: uplink ACIR model**

*Type: other For: Approval  
 38.921 v..  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **revised to R4-2017817**.

**R4-2017817 TP to TR38.921: uplink ACIR model**

*Type: other For: Approval  
 38.921 v..  
 Source: ZTE Corporation*

(Replaces R4-2016136)

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **approved**.

**R4-2016237 Uplink co-existence simulation results for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: discussion For: (not specified)  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **revised to R4-2016601**.

**R4-2016601 Uplink co-existence simulation results for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: discussion For: (not specified)  
 Source: Qualcomm Incorporated*

(Replaces R4-2016237)

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

#### 11.1.4 Antenna characteristics

**R4-2014478 TP to TR 38.921: Clarification of BS array antenna element peak gain for study on IMT parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell, ZTE*

**Abstract:**

This contribution provides a TP to include the information on how the BS array antenna element peak gains were determined in the reply LSs directly into TR 38.921.

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **approved**.

**R4-2014979 TP to TR 38.921: Correction to antenna parameter table in clause 3 and sub-clause 8.1**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Ericsson*

**Abstract:**

In this contribution a text proposal has been created to update TR 38.921, subclause 8.1 according to the reply LS sent to ITU-R WP 5D at last meeting. Also, clause 3 is updated with all for the antenna model relevant definitions.

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **revised to R4-2016902**.

**R4-2016902 TP to TR 38.921: Correction to antenna parameter table in clause 3 and sub-clause 8.1**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Ericsson*

(Replaces R4-2014979)

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **approved**.

#### 11.1.5 Relevant information for the sharing and compatibility studies

**R4-2014978 On AAS base station array antenna model and spatial selectivity**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In addition, as RAN1 requests a timely feedback from RAN4 on phase noise, this contribution also contain a draft LS response to RAN1.

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **noted**.

**R4-2015680 TP on spatial emission and interference mitigation**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **revised to R4-2016907**.

**R4-2016907 TP on spatial emission and interference mitigation**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015680)

**Discussion:**

See email discussion summary for [97e][132] FS\_6425\_10500MHz\_NR in R4-2016634.

**Decision:** The document was **approved**.

## 12 Rel-17 non-spectrum related work items for NR

### 12.1 Multiple Input Multiple Output (MIMO) Over-the-Air (OTA) requirements for NR UEs [NR\_MIMO\_OTA]

#### 12.1.1 General [NR\_MIMO\_OTA]

**R4-2017428 Email discussion summary for [97e][330] NR\_MIMO\_OTA**

*Type: other For: discussion  
 Source: Moderator (CAICT)*

**Discussion:**

The contribution summarized email discussion thread [97e][330] NR\_MIMO\_OTA. The email thread was moderated by Siting Zhu (CAICT) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017629**.

**R4-2017629 Email discussion summary for [97e][330] NR\_MIMO\_OTA**

*Type: other For: discussion  
 Source: Moderator (CAICT)*

(Replaces R4-2017428)

**Discussion:**

The contribution summarized email discussion thread [97e][330] NR\_MIMO\_OTA. The email thread was moderated by Siting Zhu (CAICT) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

|  |
| --- |
| **GTW session on 11.10th** Sub-topic 1-2 Testing parameters for Performance **Issue 1-2-1: FR1 4x4 vs. 2x2 channel models**  *Based on 1st round discussion, 5 companies support proposal 1, 2 companies suggest to also consider other channel models*  *Candidate options:*   * Option 1: CDL-C UMa for 4x4 and CDL-A UMi for 2x2 [R4-2016209] * Option 2: CDL-C UMi for 4x4 and CDL-C UMa for 2x2 * Option 3: CDL-C UMi for 4x4 and CDL-A UMa for 2x2   *Recommend WF:*  vivo: We have some concern to draw conclusion at this time, based on simulation and test results, we are not sure CDL-A UMi for 2x2, downlink power quite difficult.  QC: Since Uma more suitable for 2X2 with large test coverage, we would like to further check other options considering coverage mapping between different channel model and MIMO anttenas.4  Keysight: Any volunteer to do the study for other options except option 1.  Vivo: We are running simulation, need to more to check.  QC: We planned to bring evaluation in next RAN4 meeting, we would like to ensure test coverage.  Sprient: We support op1.  Agreement:  Option 1: CDL-C UMa for 4x4 and CDL-A UMi for 2x2 (baseline)  Option 2: CDL-C UMi for 4x4 and CDL-C UMa for 2x2  Option 3: CDL-C UMi for 4x4 and CDL-A UMa for 2x2  Make conclusion in RAN4#98e based on above options Sub-topic 1-3 Optimization of test methodologies **Issue 1-3-1: System implementation of 3D-MPAC**  *Based on 1st round discussion, 6 companies support (Keysight, Samsung, vivo, Sprient, Xiaomi, CAICT) option 1, 3 companies (OPPO, CAICT, R&S) support option2.*  *Candidate options:*   * Option 1: Adopt proposal 1. [R4-2016210] * Option 2: Adopt proposal 3, while proposal 1 is considered as an example of system implementation. [R4-2015353]   *If option2 is selected, the wording and the figures to explain it need to be improved.*  *Recommend WF:*  Keysight: In previous agreements, we plan to standardize the probe location, without clear definition, the measurement results may hard to harmonize with measurement uncertainty.  CAICT: We prefer option 2 considering flexibility benefits, willing to comprise with option 1.  Oppo: We think option 2 make probe location clear enough. We have implementation freedom for option2.  R&S: similar view as Oppo. We can further improve the rules.  Vivo: We already have agreements, taking LTE history; we need to have clear system layer-out to align the assumption for next step.  Keysight: The absolute probe location not fixed, but we already agree we need to standardize the absolute probe location.  Agreement: Adopt proposal 1. Sub-topic 1-4 channel model validation **Issue 1-4-2: Channel model validation limits for FR2 MIMO OTA**  *Tentative agreements:*   * Agree on reference curves (for 6 probe system) for FR2 channel models, for PDP, Doppler Temporal Correlation. [R4-2014536]   *Clarification question:*   * Q1: Further clarify the type of reference curves in R4-2014536, i.e. curves for limited probes, infinite number of probes. * Q2: What kind of curves should be provided as reference for channel model validation?   *Proposal:*   * Proposal 1(new): simulated curve with infinite number of probes first, and simulated curve with limited probes as reference (worst case):   + - For FR1, PDP, Doppler Temporal Correlation for 16 probes system     - For FR2, PDP, Doppler Temporal Correlation and PSP for 6 probes system   *Recommend WF:*  *MVG: XP ration curve also need to be included.*  Keysight: CE BW? -> BS filtering  Spirent: CE BW filtering only for PDP.  Vivo: We found with CW BW filtering, the curve close the actual measurement. We would like to add simulation curve into TR as reference.  QC: For FR2 with limited probes, how we can get the reference curve, we can start with infinite number of probes with theoretical analysis first.  Vivo: Nothing related to previous MVG proposal.  R&S: Make sense to go with theoretical analysis first.  Agreement:  RAN4 consider both of two cases  Case 1: simulated curve with infinite number of probes (optional)  Case 2: simulated curve with limited number of probes (16 probes for FR1 and 6 probes for FR2)  Case 2 should be used as a reference to determine pass fail limits.  Keysight/CAICT/MVG/vivo/QC/Huawei: support case 2 as reference.  R&S: We should need to consider range length. Sub-topic 2-2 Performance metric for FR1 MIMO OTA **Issue 2-2-1: Maximum downlink RS-EPRE for FR1 MIMO OTA performance metric**  *Candidate options for below 3GHz:*   * Option 1: -80dBm/15kHz or equivalent (-77dBm/30kHz); [R4-2014723] * Option 2: (new) -80dBm/15kHz for 10MHz gNB setting. Further study the value for 40MHz bandwidth.   *Recommend WF:*  *Agreement: option 2*  **Issue 2-2-2: Exception points for FR1 MIMO OTA performance metric for below 3GHz bands**  *Candidate options:*   * Option 1: 95%TP (10 of total 12 rotations) * Option 2: 70%TP (11 of total 12 rotations) and 90%TP (10 of total 12 rotations) (Samsung pending DL power agreements) * Option 3: 70%TP (11 of total 12 rotations) and 95%TP (10 of total 12 rotations) (QC) * Option 4: others   *Recommend WF:*  70%TP (11 of total 12 rotations) for 10MHz CHBW , FFS for 40MHz CHBW  FFS additional test metric with below options   * Option 1: 90%TP (10 of total 12 rotations) * Option 2: 95%TP (10 of total 12 rotations)   Samsung: This is pending on DL power, now we only agreement for 10MHz. We prefer option 3 based on the assumption DL power. Sub-topic 2-4 Simulation issues for FR2 performance evaluation **Issue 2-4: approaches for FR2 MIMO OTA**  *Candidate options:*   * Option 1: simulation results is major approach * Option 2: based on measurement results, simulation for checking and easy understanding the impacts. * Option 3: both simulation and measurement results are considered together. (vivo, QC)   *Recommend WF:*  Agreement: Option 3: Both simulation and measurement results are considered together Sub-topic 3-1 Number of slots for NR MIMO OTA testing **Issue 3-1: Number of slots for NR MIMO OTA testing**  *Based on 1st round discussion, 4 companies (Samsung, vivo, CAICT, Qualcomm) support option1 1(20k slots), 1 company (Keysight) support option 2.*  *Candidate options:*   * Option 1: Adopt 20k as minimum number of slots [R4-2016227] * Option 2: Adopt 40k slots for FR1, 75k slots for FR2 * Option 3: (new) Adopt 20k as minimum number of slots for FR1; 20k as the minimum number of slots for FR2 UMi models, and [75k] for fr2 Indoor Office models   *Recommend WF:*  For FR1 15kHz: 20k slots , 30kHz: 40k slots  For FR2 20k for FR2 UMi model, 75k for fr2 Indoor Office models  Further study to reduce the minimum number of slots not precluded |

**R4-2017585 WF on NR MIMO OTA**

*Type: other For: discussion  
 Source: vivo, CAICT*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **approved**.

**R4-2017632 WF on FR2 MIMO OTA simulation assumption**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **approved**.

**R4-2015311 Framework on NR MIMO OTA requirements development**

*Type: discussion For: Approval  
 Source: CAICT,vivo*

**Abstract:**

Framework on NR MIMO OTA requirements including a set of guidelines for laboratories alignment activities

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

**R4-2016216 TS 38.151 v0.1.0 NR MIMO OTA requirements**

*Type: draft TS For: Agreement  
 38.151 v0.1.0  
 Source: vivo*

**Abstract:**

New version TS

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **agreed**.

**R4-2016217 LS on FR1 MIMO OTA**

*Type: LS out For: Approval  
 to CTIA, CCSA  
 Source: vivo, CAICT*

**Abstract:**

LS to CTIA and CCSA

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **revised to R4-2017583**.

**R4-2017583 LS on FR1 MIMO OTA**

*Type: LS out For: Approval  
 to CTIA, CCSA  
 Source: RAN4*

(Replaces R4-2016217)

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **approved**.

**R4-2016218 TP to TS 38.151 v0.0.1 on general part**

*Type: pCR For: Approval  
 38.151 v0.0.1  
 Source: vivo, CAICT*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **approved**.

**R4-2016588 Discussion on MIMO OTA framework**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

#### 12.1.2 Performance Requirements [NR\_MIMO\_OTA-Core]

**R4-2014829 Proposal of FR2 MIMO OTA simulation approach workplan**

*Type: discussion For: Approval  
 Source: MediaTek Beijing Inc.*

**Abstract:**

Proposal: Approve FR2 MIMO OTA simulation approach workplan as Fig 1. i.e.

• RAN4#99-e (May, 2021): agree on simulation setting

• RAN4#100 to RAN4#101 (Aug to Nov, 2021): simulation data collection

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

##### 12.1.2.1 Performance Requirements for FR1 [NR\_MIMO\_OTA-Core]

**R4-2016209 On FR1 4x4 vs. 2x2 channel models**

*Type: other For: Approval  
 Source: Keysight Technologies UK Ltd*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

**R4-2016220 Channel model simulation for FR1 performance requirement**

*Type: other For: Discussion  
 Source: vivo*

**Abstract:**

Channel model simulation to match 2x2 and 4x4 scenario

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **withdrawn**.

##### 12.1.2.2 Performance Requirements for FR2 [NR\_MIMO\_OTA-Core]

**R4-2015352 Analysis on the impact of number of test points**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

**R4-2016208 On FR2 MIMO OTA channel model down selection**

*Type: other For: Approval  
 Source: Keysight Technologies UK Ltd*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

**R4-2016219 Discussions on FR2 MIMO OTA requirements**

*Type: other For: Approval  
 Source: vivo, CAICT*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

**R4-2016235 Views on for FR2 MIMO OTA**

*Type: discussion For: (not specified)  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

**R4-2016539 Simulation assumptions for NR FR2 MIMO OTA**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

#### 12.1.3 Testing methodologies [NR\_MIMO\_OTA-Core]

**R4-2014688 Effect of White Box Approach on Simple-Sectored Multi-Probe Anechoic Chamber Design**

*Type: discussion For: Information  
 Source: BUPT*

**Abstract:**

This paper focus on white box approach and evaluate the system design for SS-MPAC using the black box and white box approach.

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

**R4-2014710 Effect of White Box Approach on Simple-Sectored Multi-Probe Anechoic Chamber Design**

*Type: discussion For: Information  
 Source: BUPT*

**Abstract:**

This paper focus on white box approach and evaluate the system design for SS-MPAC using the black box and white box approach.

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **withdrawn**.

**R4-2015368 Discussion on MIMO OTA test methodologies**

*Type: discussion For: Approval  
 Source: Huawei,HiSilicon*

**Abstract:**

Proposal 1: We prefer to keep UMi CDL-C as final requirement in NR FR2 MIMO OTA.

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

##### 12.1.3.1 Testing parameters for Performance [NR\_MIMO\_OTA-Core]

**R4-2014723 Discussion on FR1 and FR2 MIMO OTA**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

**R4-2016222 TP to TS 38.151 v0.0.1 on FR1 test system for requirements**

*Type: pCR For: Approval  
 38.151 v0.0.1  
 Source: vivo, CAICT*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **approved**.

**R4-2016589 Discussion on MIMO OTA open issues**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

##### 12.1.3.2 Optimization of test methodologies [NR\_MIMO\_OTA-Core]

**R4-2015258 on UE orientation clarification**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

**R4-2015353 The rules for 3D-MPAC system implementation**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

**R4-2016210 On Probe Configurations and Channel model vs. OTA test system coordinate systems for FR2 MIMO OTA**

*Type: other For: Approval  
 Source: Keysight Technologies UK Ltd*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

##### 12.1.3.3 Channel model validation [NR\_MIMO\_OTA-Core]

**R4-2014536 Channel Model Assumptions**

*Type: other For: Approval  
 Source: Spirent Communications*

**Abstract:**

Ideal curves for the PDP and Doppler Temporal Correlation are shown for each of the FR2 channel models.

Proposal 1. Agree on ideal curves for FR2 channel models, for PDP, Doppler Temporal Correlation.

Proposal 2. Agree on additional values for FR2: PSP,

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

**R4-2016221 TP to TS 38.151 v0.0.1 on FR1 Channel model and RMC**

*Type: pCR For: Approval  
 38.151 v0.0.1  
 Source: vivo, CAICT, Spirent*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **revised to R4-2017584**.

**R4-2017584 TP to TS 38.151 v0.0.1 on FR1 Channel model and RMC**

*Type: pCR For: Approval  
 38.151 v0.0.1  
 Source: vivo, CAICT, Spirent*

(Replaces R4-2016221)

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **approved**.

**R4-2016561 FR1 MIMO OTA channel model validation results**

*Type: discussion For: Approval  
 Source: CAICT,Keysight,vivo*

**Discussion:**

See email discussion summary for [97e][330] NR\_MIMO\_OTA in R4-2017428.

**Decision:** The document was **noted**.

### 12.2 RF requirements enhancement for NR frequency range 1 (FR1) [NR\_RF\_FR1\_enh]

#### 12.2.1 General and work plan [NR\_RF\_FR1\_enh -Core]

**R4-2016635 Email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [97e][133] NR\_RF\_FR1\_enh\_Part\_1. The email thread was moderated by Zhang Qian (HiSilicon Technologies Co. Ltd) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016974**.

**R4-2016974 Email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2016635)

**Discussion:**

The contribution summarized email discussion thread [97e][133] NR\_RF\_FR1\_enh\_Part\_1. The email thread was moderated by Zhang Qian (HiSilicon Technologies Co. Ltd) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2017842**.

**R4-2017842 Email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2016974)

**Decision:** The document was **noted**.

**R4-2016910 WF on MPR simulation assumption for PC2 intra-band contiguous UL CA**

*Type: other For: discussion  
 Source: Skyworks*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **approved**.

**R4-2016911 WF on RF requirements for PC2 intra-band contiguous UL CA**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **revised to R4-2017827**.

**R4-2017827 WF on RF requirements for PC2 intra-band contiguous UL CA**

*Type: other For: discussion  
 Source: Huawei*

(Replaces R4-2016911)

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **approved**.

**R4-2016912 WF on 4Rx requirement for CA\_n77(3A) and CA\_77(4A)**

*Type: other For: discussion  
 Source: Softbank*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **approved**.

**R4-2016540 work plan for Rel-17 FR1 UE RF enhancement**

*Type: Work Plan For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **revised to R4-2016908**.

**R4-2016908 work plan for Rel-17 FR1 UE RF enhancement**

*Type: Work Plan For: Approval  
 Source: Huawei, HiSilicon*

(Replaces R4-2016540)

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **approved**.

#### 12.2.2 RF core requirements [NR\_RF\_FR1\_enh -Core]

##### 12.2.2.1 UL MIMO configuration for SUL band configurations [NR\_RF\_FR1\_enh -Core]

**R4-2014735 Draft CR: Introduce NR SUL bands n80 to UL-MIMO configuration**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: CMCC*

**Abstract:**

In RAN#89E meeting, RF requirements enhancement for NR frequency range (FR1) in Rel-17 was approved in RP-202088.

One of the objectives of this WID is:

1) Enable UL MIMO configuration for SUL band configurations

Specify UL MIMO requirements for example SUL configurations with SUL band n80

Take SUL\_n41A-n80A for the example SUL band configuration

Remove the RAN2 and RAN4 restriction on configuring UL MIMO for SUL band configurations

In RAN4#95e meeting, several lower NR bands including n3 were introduced to support UL-MIMO (R4-2009162). Since n80 is the SUL band with the same frequency range of n3 uplink, n80 should also support UL-MIMO.

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **endorsed**.

**R4-2014736 LS on removing restriction on configuring UL MIMO for SUL band**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **revised to R4-2016909**.

**R4-2016909 LS on removing restriction on configuring UL MIMO for SUL band**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: RAN4*

(Replaces R4-2014736)

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **approved**.

**R4-2015181 Considerations on enabling UL-MIMO support for SUL**

*Type: discussion For: Discussion  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **noted**.

**R4-2015284 Removing restrictions on SUL UL-MIMO in Rel-17**

*Type: discussion For: Decision  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **noted**.

##### 12.2.2.2 2Tx switching between carrier 1 and carrier 2 [NR\_RF\_FR1\_enh -Core]

**R4-2016636 Email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (China Telecom)*

**Discussion:**

The contribution summarized email discussion thread [97e][134] NR\_RF\_FR1\_enh\_Part\_2. The email thread was moderated by Yang Shan (China Telecomunication Corp.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016975**.

**R4-2016975 Email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (China Telecom)*

(Replaces R4-2016636)

**Discussion:**

The contribution summarized email discussion thread [97e][134] NR\_RF\_FR1\_enh\_Part\_2. The email thread was moderated by Yang Shan (China Telecomunication Corp.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016914 WF on RF requirements for Rel-17 Tx switching enhancement**

*Type: other For: discussion  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 in R4-2016636.

**Decision:** The document was **revised to R4-2017815**.

**R4-2017815 WF on RF requirements for Rel-17 Tx switching enhancement**

*Type: other For: discussion  
 Source: China Telecom*

(Replaces R4-2016914)

**Discussion:**

See email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 in R4-2016636.

**Decision:** The document was **approved**.

**R4-2014465 Discussion on 2Tx switching between carrier 1 and carrier 2**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 in R4-2016636.

**Decision:** The document was **noted**.

**R4-2014717 Discussion on 2Tx-2tx switching comapred to the 1Tx-2Tx case**

*Type: discussion For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 in R4-2016636.

**Decision:** The document was **noted**.

**R4-2014739 UL Tx switching related RF requirements for R17 new scenarios**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 in R4-2016636.

**Decision:** The document was **noted**.

**R4-2015182 Initial considerations on 2Tx switching between 2 carriers**

*Type: discussion For: Discussion  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

See email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 in R4-2016636.

**Decision:** The document was **noted**.

**R4-2015197 Discussion on 2Tx switching between carrier 1 and carrier 2**

*Type: other For: Approval  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 in R4-2016636.

**Decision:** The document was **noted**.

**R4-2015262 consideration on UL Tx switching enhancement in Rel 17**

*Type: other For: Approval  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 in R4-2016636.

**Decision:** The document was **noted**.

**R4-2015283 Discussion on the introduction of 2Tx - 2Tx UE uplink switch**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 in R4-2016636.

**Decision:** The document was **noted**.

**R4-2015325 Enhancment of Tx Switching in R17**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 in R4-2016636.

**Decision:** The document was **noted**.

**R4-2015355 Discussion on Rel-17 FR1 Tx switching**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 in R4-2016636.

**Decision:** The document was **noted**.

##### 12.2.2.3 Tx switching between 1 carrier on band A and 2 contiguous aggregated carriers on band B [NR\_RF\_FR1\_enh -Core]

**R4-2015198 Discussion on Tx switching between 1 carrier on band A and 2 contiguous aggregated carriers on band B**

*Type: other For: Approval  
 Source: China Telecom*

**Discussion:**

See email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 in R4-2016636.

**Decision:** The document was **noted**.

##### 12.2.2.4 HPUE for TDD intra-band contiguous UL CA [NR\_RF\_FR1\_enh -Core]

**R4-2014175 HPUE TDD+TDD considerations**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **withdrawn**.

**R4-2014392 Discussion on SAR solutions of TDD intra-band contiguous UL CA HPUE**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **noted**.

**R4-2014508 PC2 UL CA Class B/C UE Architecture and MPR/A-MPR evaluation**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc., Apple Inc.*

**Abstract:**

This contribution discusses the transmitter architecture options and related preliminary MPR and A-MPR results valid for PC2 PA in class B and C UL CA.

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **noted**.

**R4-2015038 Discussion on PC2 intra-band contiguous NR CA**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **noted**.

**R4-2015261 Discussion on HP UE for TDD intra-band contiguous UL CA**

*Type: other For: Approval  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **noted**.

**R4-2015326 Discussion on HPUE for TDD intra-band contiguous UL CA**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **noted**.

**R4-2015354 Discussion on Rel-17 FR1 intra-band contiguous HPUE**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **noted**.

**R4-2016537 on intra-band CA HPUE RF architecture**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 in R4-2016635.

**Decision:** The document was **noted**.

### 12.3 NR RF requirement enhancements for frequency range 2 (FR2) [NR\_RF\_FR2\_req\_enh2]

#### 12.3.1 General and work plan [NR\_RF\_FR2\_req\_enh2-Core]

**R4-2016637 Email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1. The email thread was moderated by Petri Vasenkari (Nokia) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016976**.

**R4-2016976 Email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2016637)

**Discussion:**

The contribution summarized email discussion thread [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1. The email thread was moderated by Petri Vasenkari (Nokia) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016915 WF on Applicability of CBM/IBM for different CA**

*Type: other For: discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **approved**.

**R4-2016916 WF on UE requirements for CA configurations CA\_n258A-n260A and CA\_n257A-n259A based on IBM**

*Type: other For: discussion  
 Source: Intel*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **approved**.

**R4-2016917 WF on UE requirements for CA configurations within the same frequency group based on CBM**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **approved**.

**R4-2014513 TR skeleton for Rel-17 FR2 UE RF WI**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **agreed**.

**R4-2014514 Work plan for New WID on NR RF Enhancements for FR2**

*Type: Work Plan For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **approved**.

#### 12.3.2 RF core requirements [NR\_RF\_FR2\_req\_enh2-Core]

**R4-2014724 Discussion on Rel-17 FR2 inter-band CA**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

##### 12.3.2.1 Inter-band DL CA enhancements [NR\_RF\_FR2\_req\_enh2-Core]

**R4-2014912 More on FR2 Inter-band DL CA**

*Type: other For: Approval  
 38.101-2 v..  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

**R4-2015327 Discussion on FR2 inter-band DL CA enhancements**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

###### 12.3.2.1.1 Applicability of CBM/IBM for different CA configurations [NR\_RF\_FR2\_req\_enh2-Core]

**R4-2014293 Inter-band DL CA CBM band pairs for FR2 Rel-17**

*Type: discussion For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

**R4-2014515 FR2 interband CA CBM vs IBM**

*Type: discussion For: (not specified)  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

**R4-2014586 CBM IBM Applicability for Inter-Band DL CA**

*Type: discussion For: Approval  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

**R4-2015348 Discussion on Rel-17 FR2 inter-band DL CA**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

**R4-2016344 Views on applicability of CBM/IBM for different CA configurations**

*Type: other For: Approval  
 Source: Ericsson, Sony*

**Abstract:**

In this contribution we discuss CBM and IBM applicability and capability indication for CA configurations

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

**R4-2016523 On Rel-17 inter band DL CA\_FR2**

*Type: other For: Approval  
 38.101-2 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

###### 12.3.2.1.2 Feasibility study for CA configurations within same frequency group based on IBM [NR\_RF\_FR2\_req\_enh2-Core]

**R4-2016638 Email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

**Discussion:**

The contribution summarized email discussion thread [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2. The email thread was moderated by Sumant Iyer (Qualcomm India Pvt Ltd) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016977**.

**R4-2016977 Email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

(Replaces R4-2016638)

**Discussion:**

The contribution summarized email discussion thread [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2. The email thread was moderated by Sumant Iyer (Qualcomm India Pvt Ltd) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016918 WF on inter-band CA and UE BM type**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

See email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2 in R4-2016638.

**Decision:** The document was **revised to R4-2017813**.

**R4-2017813 WF on inter-band CA and UE BM type**

*Type: other For: discussion  
 Source: Qualcomm*

(Replaces R4-2016918)

**Discussion:**

See email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2 in R4-2016638.

**Decision:** The document was **approved**.

**R4-2014233 On the feasibility of IBM for FR2 inter-band CA within the same frequency group**

*Type: discussion For: Approval  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2 in R4-2016638.

**Decision:** The document was **noted**.

**R4-2014587 On IBM feasibility for CA configurations within same frequency group**

*Type: discussion For: Approval  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2 in R4-2016638.

**Decision:** The document was **noted**.

**R4-2015873 Views on Feasibility for CA configurations within same frequency group based on IBM**

*Type: other For: Approval  
 Source: Sony, Ericsson*

**Discussion:**

See email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2 in R4-2016638.

**Decision:** The document was **noted**.

###### 12.3.2.1.3 Feasibility study for CA configurations between different frequency groups based on CBM [NR\_RF\_FR2\_req\_enh2-Core]

**R4-2014232 On the feasibility of CBM for FR2 inter-band CA cross different frequency groups**

*Type: discussion For: Approval  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2 in R4-2016638.

**Decision:** The document was **noted**.

**R4-2015874 Views on Feasibility for CA configurations between different frequency groups based on CBM**

*Type: other For: Approval  
 Source: Sony, Ericsson*

**Discussion:**

See email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2 in R4-2016638.

**Decision:** The document was **noted**.

###### 12.3.2.1.4 UE requirements for CA configurations CA\_n258A-n260A and CA\_n257A-n259A based on IBM [NR\_RF\_FR2\_req\_enh2-Core]

**R4-2014589 UE requirements for CA\_258A-n260A and CA\_257A-n259A based on IBM**

*Type: discussion For: Approval  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

**R4-2014966 DL Inter-band CA\_n257-n259**

*Type: other For: Approval  
 Source: NTT DOCOMO INC.*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

**R4-2015875 Views on Rel-17 inter-band DL CA in FR2**

*Type: other For: Approval  
 Source: Sony, Ericsson*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

###### 12.3.2.1.5 UE requirements for CA configurations within the same frequency group based on CBM [NR\_RF\_FR2\_req\_enh2-Core]

**R4-2014588 UE requirements for CA configurations within the same frequency group based on CBM**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

##### 12.3.2.2 Inter-band UL CA [NR\_RF\_FR2\_req\_enh2-Core]

**R4-2014913 Views on FR2 Inter-band UL CA**

*Type: other For: Approval  
 38.101-2 v..  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2 in R4-2016638.

**Decision:** The document was **noted**.

**R4-2015328 Discussion on FR2 inter-band UL CA**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2 in R4-2016638.

**Decision:** The document was **noted**.

###### 12.3.2.2.1 Feasibility study for CA configurations within same frequency group based on IBM and CBM [NR\_RF\_FR2\_req\_enh2-Core]

###### 12.3.2.2.2 Feasibility study for CA configurations between different frequency groups based on CBM [NR\_RF\_FR2\_req\_enh2-Core]

**R4-2014715 Inter-band UL CA for FR2**

*Type: discussion For: (not specified)  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2 in R4-2016638.

**Decision:** The document was **noted**.

###### 12.3.2.2.3 UE requirements for CA configuration CA\_n257A-n259A based on IBM [NR\_RF\_FR2\_req\_enh2-Core]

**R4-2016086 UL inter-band CA for different band group based on IBE**

*Type: other For: Approval  
 Source: NTT DOCOMO INC.*

**Discussion:**

See email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 in R4-2016637.

**Decision:** The document was **noted**.

##### 12.3.2.3 UL gaps for self-calibration and monitoring [NR\_RF\_FR2\_req\_enh2-Core]

**R4-2016639 Email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3. The email thread was moderated by Tang Yang (Apple AB) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).)

**Decision:** The document was **revised to R4-2016978**.

**R4-2016978 Email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2016639)

**Discussion:**

The contribution summarized email discussion thread [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3. The email thread was moderated by Tang Yang (Apple AB) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).)

**Decision:** The document was **noted**.

**R4-2016919 WF on UL gap in FR2**

*Type: other For: discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3 in R4-2016639.

**Decision:** The document was **approved**.

**R4-2014218 Discusison on UL gaps for self-calibration/monitoring**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3 in R4-2016639.

**Decision:** The document was **noted**.

**R4-2014393 Discussion on UL gaps for self-calibration and monitoring**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3 in R4-2016639.

**Decision:** The document was **noted**.

**R4-2014516 FR2 gaps**

*Type: discussion For: (not specified)  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3 in R4-2016639.

**Decision:** The document was **noted**.

**R4-2014590 On performance improvements from self-calibration in UL gaps**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3 in R4-2016639.

**Decision:** The document was **noted**.

**R4-2014716 UE calibration gap motivation and view to the requirements**

*Type: discussion For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3 in R4-2016639.

**Decision:** The document was **noted**.

**R4-2014963 Discussion on UL gap for self-calibration and monitoring**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3 in R4-2016639.

**Decision:** The document was **noted**.

**R4-2015349 Discussion on Rel-17 FR2 calibration gap**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3 in R4-2016639.

**Decision:** The document was **noted**.

**R4-2016061 Analysis on power calibration gaps**

*Type: discussion For: Endorsement  
 Source: Ericsson, Sony*

**Abstract:**

Paper contains an analysis on power calibration gaps. Including observation and proposal

**Discussion:**

See email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3 in R4-2016639.

**Decision:** The document was **noted**.

**R4-2016536 on gaps for self-calibration and monitoring**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3 in R4-2016639.

**Decision:** The document was **noted**.

**R4-2016560 Further discusison on UL gaps for self-calibration and monitoring**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3 in R4-2016639.

**Decision:** The document was **noted**.

### 12.4 NR RRM further enhancement [NR\_RRM\_enh2-Core]

**R4-2017028 Email discussion summary for [97e][229] NR\_RRM\_enh2**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [97e][229] NR\_RRM\_enh2. The email thread was moderated by Jerry Cui (Apple) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017299**.

**R4-2017299 Email discussion summary for [97e][229] NR\_RRM\_enh2**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2017028)

**Discussion:**

The contribution summarized email discussion thread [97e][229] NR\_RRM\_enh2. The email thread was moderated by Jerry Cui (Apple) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

#### 12.4.1 Work plan [NR\_RRM\_enh2-Core]

**R4-2014286 Work plan for R17 FeRRM**

*Type: discussion For: Agreement  
 38.133 v..  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][229] NR\_RRM\_enh2 in R4-2017028.

**Decision:** The document was **revised to R4-2017265**.

**R4-2017265 Work plan for R17 FeRRM**

*Type: discussion For: Agreement  
 38.133 v..  
 Source: Apple*

(Replaces R4-2014286)

**Discussion:**

See email discussion summary for [97e][229] NR\_RRM\_enh2 in R4-2017028.

**Decision:** The document was **approved**.

**R4-2015310 Views on PUCCH SCell Activation/Deactivation delay requirements**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: NTT DOCOMO, INC.*

**Discussion:**

See email discussion summary for [97e][229] NR\_RRM\_enh2 in R4-2017028.

**Decision:** The document was **noted**.

### 12.5 NR measurement gap enhancements [NR\_MG\_enh-Core]

**R4-2017029 Email discussion summary for [97e][230] NR\_MG\_enh**

*Type: other For: discussion  
 Source: Moderator (MediaTek)*

**Discussion:**

The contribution summarized email discussion thread [97e][230] NR\_MG\_enh. The email thread was moderated by Ato Yu (ZTE). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017300**.

**R4-2017300 Email discussion summary for [97e][230] NR\_MG\_enh**

*Type: other For: discussion  
 Source: Moderator (MediaTek)*

(Replaces R4-2017029)

**Discussion:**

The contribution summarized email discussion thread [97e][230] NR\_MG\_enh. The email thread was moderated by Ato Yu (ZTE). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

#### 12.5.1 Work plan [NR\_MG\_enh-Core]

**R4-2014224 Work plan for measurement gap enhancement**

*Type: Work Plan For: Approval  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][230] NR\_MG\_enh in R4-2017029.

**Decision:** The document was **noted**.

**R4-2014628 Work plan of R17 NR and MR-DC measurement gap enhancements WI**

*Type: Work Plan For: Approval  
 Source: MediaTek inc., Intel Corporation*

**Discussion:**

See email discussion summary for [97e][230] NR\_MG\_enh in R4-2017029.

**Decision:** The document was **revised to R4-2017266**.

**R4-2017266 Work plan of R17 NR and MR-DC measurement gap enhancements WI**

*Type: Work Plan For: Approval  
 Source: MediaTek inc., Intel Corporation*

(Replaces R4-2014628)

**Discussion:**

See email discussion summary for [97e][230] NR\_MG\_enh in R4-2017029.

**Decision:** The document was **approved**.

### 12.6 Enhancement for NR high speed train scenario in FR1 [NR\_HST\_FR1\_enh-Core]

**R4-2017030 Email discussion summary for [97e][231] NR\_HST\_FR1\_enh**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

**Discussion:**

The contribution summarized email discussion thread [97e][231] NR\_HST\_FR1\_enh. The email thread was moderated by Jing Chen (China Mobile (Hangzhou) Inf.) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017301**.

**R4-2017301 Email discussion summary for [97e][231] NR\_HST\_FR1\_enh**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

(Replaces R4-2017030)

**Discussion:**

The contribution summarized email discussion thread [97e][231] NR\_HST\_FR1\_enh. The email thread was moderated by Jing Chen (China Mobile (Hangzhou) Inf.) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

#### 12.6.1 Work plan [NR\_HST\_FR1\_enh-Core]

**R4-2014225 Work plan for NR high speed train scenario in FR1**

*Type: Work Plan For: Approval  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][231] NR\_HST\_FR1\_enh in R4-2017030.

**Decision:** The document was **noted**.

**R4-2014705 Work plan for enhancement for NR high speed train scenario in FR1**

*Type: Work Plan For: Approval  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][231] NR\_HST\_FR1\_enh in R4-2017030.

**Decision:** The document was **revised to R4-2017267**.

**R4-2017267 Work plan for enhancement for NR high speed train scenario in FR1**

*Type: Work Plan For: Approval  
 Source: CMCC*

(Replaces R4-2014705)

**Discussion:**

See email discussion summary for [97e][231] NR\_HST\_FR1\_enh in R4-2017030.

**Decision:** The document was **approved**.

### 12.7 NR support for high speed train scenario in FR2 [NR\_HST\_FR2\_enh]

**R4-2016640 Email discussion summary for [97e][138] NR\_HST\_FR2\_enh**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

**Discussion:**

The contribution summarized email discussion thread [97e][138] NR\_HST\_FR2\_enh. The email thread was moderated by He Wang (Samsung Electronics Czech) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016979**.

**R4-2016979 Email discussion summary for [97e][138] NR\_HST\_FR2\_enh**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

(Replaces R4-2016640)

**Discussion:**

The contribution summarized email discussion thread [97e][138] NR\_HST\_FR2\_enh. The email thread was moderated by He Wang (Samsung Electronics Czech) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016921 WF on NR support for HST in FR2**

*Type: other For: discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **revised to R4-2017828**.

**R4-2017828 WF on NR support for HST in FR2**

*Type: other For: discussion  
 Source: Samsung*

(Replaces R4-2016921)

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **approved**.

#### 12.7.1 General and work plan [NR\_HST\_FR2\_enh-Core]

**R4-2014846 Work plan for NR support for high speed train scenario in FR2**

*Type: Work Plan For: Approval  
 Source: Samsung, Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **revised to R4-2016920**.

**R4-2016920 Work plan for NR support for high speed train scenario in FR2**

*Type: Work Plan For: Approval  
 Source: Samsung, Nokia, Nokia Shanghai Bell*

(Replaces R4-2014846)

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **approved**.

**R4-2015859 General considerations for FR2 HST**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

General discussion on FR2 HST

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **noted**.

**R4-2015880 TR skeleton for NR support for high speed train scenario in FR2**

*Type: other For: Approval  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **revised to R4-2016922**.

**R4-2016922 TR skeleton for NR support for high speed train scenario in FR2**

*Type: other For: Approval  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015880)

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **revised to R4-2017838**.

**R4-2017838 TR skeleton for NR support for high speed train scenario in FR2**

*Type: other For: Approval  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell, Samsung*

(Replaces R4-2016922)

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **approved**.

#### 12.7.2 High speed train deployment scenario in FR2 [NR\_HST\_FR2\_enh-Core]

**R4-2014564 Views on high speed train deployments scenarios in FR2**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **noted**.

**R4-2014632 FR2 HST analysis framework**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **noted**.

**R4-2014834 Discussion on scenarios for FR2 high speed train**

*Type: discussion For: Discussion  
 Source: Verizon, Samsung*

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **noted**.

**R4-2014847 Discussion on high speed train deployment scenario in FR2**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **noted**.

**R4-2015614 Discussion on high speed train deployment scenario in FR2**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **noted**.

**R4-2015860 Deployment scenarios for FR2 HST**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Some deployment considerations for FR2 HST

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **noted**.

**R4-2016387 On the high-speed train deployment scenario in FR2**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution provides an overview of HST deployment scenarios in FR2. We collect main deployment parameters, highlight the magnitude and potential impact of the Doppler effect, and discuss channel models.

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **noted**.

#### 12.7.3 UE RF core requirements [NR\_HST\_FR2\_enh-Core]

**R4-2014848 Discussion on UE RF requirement for FR2 HST**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **noted**.

**R4-2015087 Power Class 4 for HST**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **noted**.

**R4-2016058 On UE Core requirements for FR2 HST**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

UE RF core requirements affected by HST FR2 deployment(s)

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **noted**.

**R4-2016538 on RF requirement for NR FR2 HST**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][138] NR\_HST\_FR2\_enh in R4-2016640.

**Decision:** The document was **noted**.

### 12.8 Solutions for NR to support non-terrestrial networks (NTN) [NR\_NTN\_solutions]

#### 12.8.1 General and work plan [NR\_NTN\_solutions]

**R4-2017410 Email discussion summary for [97e][312] NTN\_Solutions**

*Type: other For: discussion  
 Source: Moderator (THALES)*

**Discussion:**

The contribution summarized email discussion thread [97e][312] NTN\_Solutions. The email thread was moderated by Dorin Panaitopol (THALES) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017630**.

**R4-2017630 Email discussion summary for [97e][312] NTN\_Solutions**

*Type: other For: discussion  
 Source: Moderator (THALES)*

(Replaces R4-2017410)

**Discussion:**

The contribution summarized email discussion thread [97e][312] NTN\_Solutions. The email thread was moderated by Dorin Panaitopol (THALES) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017600 WF on NTN solutions**

*Type: other For: discussion  
 Source: THALES*

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **approved**.

**R4-2014066 On the status of NTN in 3GPP**

*Type: discussion For: (not specified)  
 Source: Fraunhofer HHI, Fraunhofer IIS*

**Abstract:**

This document analyses the work done by other WGs in NTN-related work and study items and shall serve as a starting point for delegates not yet involved in NTN to get an overview on the past work and open issues.

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

**R4-2014381 NR\_NTN\_solutions work plan**

*Type: Work Plan For: Endorsement  
 Source: THALES*

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **revised to R4-2017661**.

**R4-2017661 NR\_NTN\_solutions work plan**

*Type: Work Plan For: Endorsement  
 Source: THALES*

(Replaces R4-2014381)

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **approved**.

**R4-2014785 Views on NTN bands and coexistence study**

*Type: discussion For: Approval  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

**R4-2014880 Discussion on the applicability of DFT-S-OFDM for NTN**

*Type: discussion For: (not specified)  
 Source: CAICT*

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

**R4-2015905 Specification structure for NTN nodes**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution is proposing specification structure for the introduction of NTN

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

#### 12.8.2 Use cases, deployment scenarios, and regulatory information [NR\_NTN\_solutions-Core]

**R4-2014467 Possible FR2 exemplary band for NR based satellite networks**

*Type: discussion For: Discussion  
 Source: HUGHES Network Systems Ltd, Thales*

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

**R4-2015252 NTN - On use cases and deployment scenarios**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

**R4-2015263 Initial discussion for NR to support non-terrestrial networks**

*Type: other For: Approval  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

**R4-2015547 General discussion about NTN topic**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

**R4-2015906 NTN Scenarios and Regulatory overview**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This conrtibution is clarifying NTN scenarios and associated wording. It analyze Radio Regulations to propose freqnecy bands for NTN

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

**R4-2015913 NTN use case scenarios and architectures**

*Type: discussion For: Discussion  
 Source: THALES*

**Abstract:**

The objective of this document is to establish working assumption for the scenarios and use cases to be considered by NTN RAN4 work for the definition of the generic and core requirements for NTN-NR.

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

**R4-2015915 Possible FR1 exemplary band for NR satellite networks**

*Type: discussion For: Discussion  
 Source: THALES*

**Abstract:**

The objective of this document is to provide an exemplary band in FR1 to be used by RAN4 work.

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

#### 12.8.3 Coexistence aspects [NR\_NTN\_solutions -Core]

**R4-2015945 NTN Proposed RF Core Requirements**

*Type: discussion For: Discussion  
 Source: THALES*

**Abstract:**

The objective of this document is to propose a framework for NTN core requirements and consider in particular the potential Key Performance Indicators (KPIs) to be considered by NTN RAN4 work.

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

##### 12.8.3.1 Simulation assumptions [NR\_NTN\_solutions -Core]

**R4-2015548 General discussion on NTN simulation assumptions**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

**R4-2015907 NTN Simulations discussion**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution provides an overview of the needed simulations for NTN and initiates related discussions

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

**R4-2016112 Discussion on simulation assumptions for NTN coexistence study**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

##### 12.8.3.2 UE requirements aspects [NR\_NTN\_solutions -Core]

##### 12.8.3.3 BS requirements aspects [NR\_NTN\_solutions -Core]

**R4-2015908 NTN coexistence - BS requirements aspects**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution introduces BS requirements aspects in the scope of NTN

**Discussion:**

See email discussion summary for [97e][312] NTN\_Solutions in R4-2017410.

**Decision:** The document was **noted**.

#### 12.8.4 RRM requirements [NR\_NTN\_solutions-Core]

**R4-2017031 Email discussion summary for [97e][232] NR\_NTN\_solutions\_RRM**

*Type: other For: discussion  
 Source: Moderator (THALES)*

**Discussion:**

The contribution summarized email discussion thread [97e][232] NR\_NTN\_solutions\_RRM. The email thread was moderated by Dorin Panaitopol (THALES) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017302**.

**R4-2017302 Email discussion summary for [97e][232] NR\_NTN\_solutions\_RRM**

*Type: other For: discussion  
 Source: Moderator (THALES)*

(Replaces R4-2017031)

**Discussion:**

The contribution summarized email discussion thread [97e][232] NR\_NTN\_solutions\_RRM. The email thread was moderated by Dorin Panaitopol (THALES) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

**R4-2017268 WF on NR NTN RRM requirements**

*Type: other For: discussion  
 Source: THALES*

**Discussion:**

See email discussion summary for [97e][232] NR\_NTN\_solutions\_RRM in R4-2017031.

**Decision:** The document was **revised to R4-2017350**.

**R4-2017350 WF on NR NTN RRM requirements**

*Type: other For: discussion  
 Source: THALES*

(Replaces R4-2017268)

**Discussion:**

See email discussion summary for [97e][232] NR\_NTN\_solutions\_RRM in R4-2017031.

**Decision:** The document was **approved**.

**R4-2014658 Initial discussion on RRM impact for NR NTN system**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][232] NR\_NTN\_solutions\_RRM in R4-2017031.

**Decision:** The document was **noted**.

**R4-2014875 Discussion on RRM requirements in NTN**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][232] NR\_NTN\_solutions\_RRM in R4-2017031.

**Decision:** The document was **noted**.

**R4-2014928 Satellite Position Accuracy**

*Type: discussion For: Decision  
 Source: Eutelsat S.A.*

**Discussion:**

See email discussion summary for [97e][232] NR\_NTN\_solutions\_RRM in R4-2017031.

**Decision:** The document was **noted**.

**R4-2015730 Initial discussion on NTN RRM requirements**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Initial discussion on NTN RRM

**Discussion:**

See email discussion summary for [97e][232] NR\_NTN\_solutions\_RRM in R4-2017031.

**Decision:** The document was **noted**.

**R4-2015946 NTN RRM and Demodulation KPIs**

*Type: discussion For: Discussion  
 Source: THALES*

**Abstract:**

The objective of this document is to propose a framework for NTN core requirements and consider in particular the potential demodulation Key Performance Indicators (KPIs) & RRM aspects to be considered by NTN RAN4 work.

**Discussion:**

See email discussion summary for [97e][232] NR\_NTN\_solutions\_RRM in R4-2017031.

**Decision:** The document was **noted**.

**R4-2016037 NTN impact on RRM**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Analysis of RRM requirements of TS 38.133

**Discussion:**

See email discussion summary for [97e][232] NR\_NTN\_solutions\_RRM in R4-2017031.

**Decision:** The document was **noted**.

### 12.9 UE Power Saving Enhancements [NR\_UE\_pow\_sav\_enh]

**R4-2017032 Email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM**

*Type: other For: discussion  
 Source: Moderator (MediaTek)*

**Discussion:**

The contribution summarized email discussion thread [97e][233] NR\_UE\_pow\_sav\_enh\_RRM. The email thread was moderated by Hsuanli Lin (MediaTek (Wuhan) Inc.) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2017303**.

**R4-2017303 Email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM**

*Type: other For: discussion  
 Source: Moderator (MediaTek)*

(Replaces R4-2017032)

**Discussion:**

The contribution summarized email discussion thread [97e][233] NR\_UE\_pow\_sav\_enh\_RRM. The email thread was moderated by Hsuanli Lin (MediaTek (Wuhan) Inc.) and treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

#### 12.9.1 General and work plan [NR\_UE\_pow\_sav\_enh]

**R4-2014366 Work plan of Rel-17 Power Saving Enhancements**

*Type: Work Plan For: Approval  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **revised to R4-2017270**.

**R4-2017270 Work plan of Rel-17 Power Saving Enhancements**

*Type: Work Plan For: Approval  
 Source: MediaTek inc.*

(Replaces R4-2014366)

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **approved**.

**R4-2014367 Evaluation on Rel-17 RLM/BFD measurement relaxation**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **noted**.

**R4-2014534 Evaluation assumptions for R17 RLM/BFD relaxation**

*Type: discussion For: Approval  
 Source: vivo, MediaTek*

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **revised to R4-2017306**.

**R4-2017306 Evaluation assumptions for R17 RLM/BFD relaxation**

*Type: discussion For: Approval  
 Source: vivo, MediaTek*

(Replaces R4-2014534)

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **approved**.

#### 12.9.2 Feasibility and performance impact of relaxing UE measurements for RLM and/or BFD [NR\_UE\_pow\_sav\_enh]

**R4-2017269 WF on NR UE Power Saving Enhancements**

*Type: other For: discussion  
 Source: MediaTek*

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **approved**.

**R4-2014219 Discussion on feasibility and performance impact of RLM/BFD relaxation**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **noted**.

**R4-2014428 Discussion on RLM relaxition for NR power saving**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **noted**.

**R4-2014535 Discussion and initial results for R17 RLM/BFD relaxation**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **noted**.

**R4-2014654 Discussion on RRM measurement relaxation in connected mode for NR power saving enhancement**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **noted**.

**R4-2014797 Discussion on RLM BFD measurement relaxation**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: OPPO*

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **noted**.

**R4-2015199 Discussion about evaluation methodology for relaxation of RLM/BFD measurements**

*Type: discussion For: Discussion  
 Source: Nokia Solutions & Networks (I)*

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **noted**.

**R4-2015485 Preliminary discussion on RLM/BFD relaxation in power saving enhancements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **noted**.

**R4-2016150 iscussions on UE power saving for RLM and BM**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we discuss the power saving techniques for UEs in radio link monitoring (RLM) and beam management (BM) procedures from an RRM perspective.

**Discussion:**

See email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM in R4-2017032.

**Decision:** The document was **noted**.

### 12.10 NR Sidelink enhancement [NRSL\_enh]

**R4-2016641 Email discussion summary for [97e][139] NRSL\_enh**

*Type: other For: discussion  
 Source: Moderator (LG Electronics)*

**Discussion:**

The contribution summarized email discussion thread [97e][139] NRSL\_enh. The email thread was moderated by Suhwan Lim (LG Electronics France) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016980**.

**R4-2016980 Email discussion summary for [97e][139] NRSL\_enh**

*Type: other For: discussion  
 Source: Moderator (LG Electronics)*

(Replaces R4-2016641)

**Decision:** The document was **noted**.

**R4-2016923 WF on the proposed operating bands for NR SL operation in FR1**

*Type: other For: discussion  
 Source: AT&T*

**Discussion:**

See email discussion summary for [97e][139] NRSL\_enh in R4-2016641.

**Decision:** The document was **approved**.

#### 12.10.1 General and work plan [NRSL\_enh]

**R4-2014326 Work plan for SL enhancement for RF perspectives in Rel-17**

*Type: Work Plan For: Approval  
 Source: LG Electronics France*

**Discussion:**

See email discussion summary for [97e][139] NRSL\_enh in R4-2016641.

**Decision:** The document was **revised to R4-2016924**.

**R4-2016924 Work plan for SL enhancement for RF perspectives in Rel-17**

*Type: Work Plan For: Approval  
 Source: LG Electronics France*

(Replaces R4-2014326)

**Discussion:**

See email discussion summary for [97e][139] NRSL\_enh in R4-2016641.

**Decision:** The document was **approved**.

**R4-2014973 General views on NR sidelink enhancements in R17**

*Type: discussion For: Approval  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][139] NRSL\_enh in R4-2016641.

**Decision:** The document was **noted**.

**R4-2015256 on Rel-17 V2X work**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Discussion:**

See email discussion summary for [97e][139] NRSL\_enh in R4-2016641.

**Decision:** The document was **noted**.

**R4-2016281 General aspects on RAN4 work for public safety UC support**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

in this paper, we present our view on general work aspects for RF work related to public safety UC.

**Discussion:**

See email discussion summary for [97e][139] NRSL\_enh in R4-2016641.

**Decision:** The document was **noted**.

**R4-2016484 On Rel-17 sidelink enhancement**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][139] NRSL\_enh in R4-2016641.

**Decision:** The document was **noted**.

#### 12.10.2 Spectrum request for SL operation [NRSL\_enh-Core]

**R4-2016280 spectrum aspect on public saftey UC support**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

in this paper, we present our view on spectrum aspects related to regulatory work.

**Discussion:**

See email discussion summary for [97e][139] NRSL\_enh in R4-2016641.

**Decision:** The document was **noted**.

**R4-2016464 NR Sidelink Operating Bands**

*Type: discussion For: (not specified)  
 Source: AT&T, FirstNet*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

## 13 Rel-17 Study Items for NR

### 13.1 Study on enhanced test methods for FR2 in NR [FS\_FR2\_enhTestMethods]

**R4-2017429 Email discussion summary for [97e][331] FR2\_enhTestMethods**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [97e][331] FR2\_enhTestMethods. The email thread was moderated by Anatoliy Ioffe (Apple Italia S.R.L.) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2017631**.

**R4-2017631 Email discussion summary for [97e][331] FR2\_enhTestMethods**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2017429)

**Discussion:**

The contribution summarized email discussion thread [97e][331] FR2\_enhTestMethods. The email thread was moderated by Anatoliy Ioffe (Apple Italia S.R.L.) and treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2017663 Draft TR38.884 Study on enhanced test methods for FR2 NR UEs v0.1.0**

*Type: draft TR For: Agreement  
 38.884 v0.1.0  
 Source: Apple, vivo*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **agreed**.

**R4-2017593 WF on remaining open issues with the test methodology for high DL power and low UL power test cases**

*Type: other For: discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **approved**.

**R4-2017594 WF on solutions to minimize the impact of polarization basis mismatch between the TE and DUT on the RF testing**

*Type: other For: discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **revised to R4-2017689**.

**R4-2017689 WF on solutions to minimize the impact of polarization basis mismatch between the TE and DUT on the RF testing**

*Type: other For: discussion  
 Source: Samsung*

(Replaces R4-2017594)

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **approved**.

**R4-2017595 WF on testability enhancements to support the verification of RF requirements for inter-band (FR2+FR2) CA**

*Type: other For: discussion  
 Source: Anritsu*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **approved**.

**R4-2017596 WF on extreme temperature conditions for all applicable FR2 UE RF test cases**

*Type: other For: discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **approved**.

**R4-2017597 WF on testability enhancements to reduce test time**

*Type: other For: discussion  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **approved**.

**R4-2017599 WF on testability aspects for the introduction of the new band n262**

*Type: other For: discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **approved**.

**R4-2014918 Updated work plan for FS\_FR2\_enhTestMethods**

*Type: Work Plan For: Approval  
 Source: Apple Inc., vivo*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **approved**.

#### 13.1.1 Test methodology for high DL power and low UL power test cases [FS\_FR2\_enhTestMethods]

**R4-2014267 Impact on beam management due to spherical wavefront in DL**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

We discuss need for dual pol TE

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2014919 TP to TR38.884 on High DL and Low UL power test cases**

*Type: other For: Approval  
 38.884 v..  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **revised to R4-2017598**.

**R4-2017598 TP to TR38.884 on High DL and Low UL power test cases**

*Type: other For: Approval  
 38.884 v..  
 Source: Apple Inc., Keysight Technologies, Rohde & Schwarz, MVG Industries*

(Replaces R4-2014919)

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **approved**.

**R4-2015319 Test methodology for high DL power and low UL power test cases**

*Type: discussion For: Approval  
 Source: CAICT*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2016213 On Test methodology for high DL power and low UL power test cases**

*Type: other For: Approval  
 Source: Keysight Technologies UK Ltd*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2016377 Impact of phase variation**

*Type: other For: Approval  
 Source: MVG Industries, Sony*

**Abstract:**

During RAN4#e-96, a WF was agreed [1] for AI-enhanced test methods for NR FR2. Specifically, the simulation assumptions were agreed upon. The aim is to address the issue of UE beam management sensitivity to phase variation of the DL signal. Based on the a

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2016562 Views on test methods for high DL power and low UL power TCs**

*Type: discussion For: Approval  
 Source: ROHDE & SCHWARZ*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

#### 13.1.2 Polarization basis mismatch [FS\_FR2\_enhTestMethods]

**R4-2014266 FR2 testability enhancement for polarization mismatch**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

We discuss need for dual pol TE

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2014725 Discussion on FR2 EIRP measurement enhancement**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2014827 Analysis on practical TPMI and 2-port CSI-RS for EIRP measurement**

*Type: discussion For: Approval  
 Source: MediaTek Beijing Inc.*

**Abstract:**

Proposal1: List and apply “TPMI side condition method” as one of EIRP measurement enhancement methods for Rel-15 and forward UE.

Proposal2: “Practical TPMI” shall be further applied for “TPMI side condition method”

Proposal3: “2-port CSI-RS” shall be prov

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2014920 Views on polarization mismatch**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2015871 Views on testability enhancement for UE FR2 test**

*Type: other For: Discussion  
 Source: Sony, Ericsson*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2015872 Views on testability enhancement for UE FR2 test**

*Type: other For: Discussion  
 Source: Sony, Ericsson*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **withdrawn**.

**R4-2015895 Views on testability enhancement for UE FR2 test**

*Type: other For: Discussion  
 Source: Sony, Ericsson*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **withdrawn**.

**R4-2016212 On minimizing the impact of polarization basis mismatch between the TE and DUT**

*Type: other For: Approval  
 Source: Keysight Technologies UK Ltd*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2016568 Views on polarization basis mismatch**

*Type: discussion For: Approval  
 Source: ROHDE & SCHWARZ*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

#### 13.1.3 Enhanced test methods for inter-band (FR2+FR2) CA [FS\_FR2\_enhTestMethods]

**R4-2014265 On impact of non-co-located test antennae for FR2 inter-band testing**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

We study the effect of off-focus test system antenna in IFF systems before we list some ramifications to inter-band test requirements

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2014492 Beam correspondence performance measurement improvements of FR2 UEs using carrier aggregation and shared antenna arrays**

*Type: discussion For: (not specified)  
 Source: Fraunhofer HHI*

**Abstract:**

This contribution identifies limitations in the current framework which could affect beam correspondence with carrier aggregation in FR2.

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2014687 Testability of FR2 inter-band DL 2CA EIS by non co-located antenna**

*Type: discussion For: Approval  
 Source: Anritsu corporation*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2014921 Impact of AoA offset on inter-band CA PSD difference**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

#### 13.1.4 Extreme temperature conditions [FS\_FR2\_enhTestMethods]

**R4-2016214 On extreme temperature condition testing**

*Type: other For: Approval  
 Source: Keysight Technologies UK Ltd*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2016223 Views on FR2 extreme condition testing**

*Type: other For: Approval  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

#### 13.1.5 Enhanced test methods for FR2 DL 256QAM RF [FS\_FR2\_enhTestMethods]

#### 13.1.6 Test time reduction [FS\_FR2\_enhTestMethods]

**R4-2014491 Beam sweeping and test time reduction in FR2**

*Type: discussion For: (not specified)  
 Source: Fraunhofer HHI, Fraunhofer IIS*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

**R4-2014726 Discussion on FR2 test time reduction**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

#### 13.1.7 Testability for band n262 [FS\_FR2\_enhTestMethods]

**R4-2014922 Band n262 testability**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

##### 13.1.7.1 Extension of frequency applicability of permitted methods in 38.810 [FS\_FR2\_enhTestMethods]

**R4-2016224 Discussion on Testability issue of 47GHz band**

*Type: other For: Approval  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][331] FR2\_enhTestMethods in R4-2017429.

**Decision:** The document was **noted**.

##### 13.1.7.2 Extension of frequency applicability of enhancement objectives 1-6 [FS\_FR2\_enhTestMethods]

### 13.2 Study on supporting NR from 52.6 GHz to 71 GHz [FS\_NR\_52\_to\_71GHz]

#### 13.2.1 Numerology, Channel BW [FS\_NR\_52\_to\_71GHz]

**R4-2016642 Email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

**Discussion:**

The contribution summarized email discussion thread [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1. The email thread was moderated by Philip Coan (Qualcomm Austria RFFE GmbH) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016981**.

**R4-2016981 Email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

(Replaces R4-2016642)

**Discussion:**

The contribution summarized email discussion thread [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1. The email thread was moderated by Philip Coan (Qualcomm Austria RFFE GmbH) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2017812**.

**R4-2017812 Email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

(Replaces R4-2016981)

**Decision:** The document was **noted**.

**R4-2016925 WF on Min and Max Channel Bandwidths in 52 to 71 GHz**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **revised to R4-2017832**.

**R4-2017832 WF on Min and Max Channel Bandwidths in 52 to 71 GHz**

*Type: other For: discussion  
 Source: Huawei*

(Replaces R4-2016925)

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **approved**.

**R4-2016926 WF on Phase noise mask and PTRS**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **approved**.

**R4-2016927 WF on timing text proposal to TR**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **approved**.

**R4-2016928 LS on PN models**

*Type: LS out For: Approval  
 to RAN1  
 Source: RAN4*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **approved**.

Attachments to this outgoing LS: R4-2014976, R4-2016533, R4-2015443

##### 13.2.1.1 General [FS\_NR\_52\_to\_71GHz]

**R4-2014382 Further discussion on numerology and CBW for above 52.6 GHz**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2014737 Bandwidth and numerology for NR in 52.6GHz**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2014892 Further considerations on the numerology and channel bandwidth sizes for the 60GHz frequency range**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2014974 Further discussion on channel bandwidths and numerology for B52.6G**

*Type: discussion For: Approval  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2015206 Numerology and channel bandwidth discussion for NR beyond 52.6 GHz**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2015307 Channel bandwidth and subcarrier spacing for 52.6 GHz to 71GHz**

*Type: discussion For: Discussion  
 Source: NEC*

**Abstract:**

We show our view on the channel bandwidth and subcarrier spacing

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2015563 On numerology and channel bandwidth in 52.6 - 71 GHz**

*Type: discussion For: Approval  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2015700 Discussion on 52.6 GHz to 71 GHz SI**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2015727 On 52.6 to 71 GHz numerology evaluation and channel bandwidths**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In RAN#86, a rel-17 SI covering support for NR in 52.6 – 71 GHz was approved [1]. The SI and the consecutive WI aims to maximize the leverage of FR2 based implementations and minimize the specification burden, where possible extension of FR2 operation up

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2015886 Views on numerologies above 52 GHz**

*Type: other For: Discussion  
 Source: Sony*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2015890 Views on numerologies above 52 GHz**

*Type: other For: Discussion  
 Source: Sony*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2015891 Views on numerologies above 52 GHz**

*Type: other For: Discussion  
 Source: Sony*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **withdrawn**.

**R4-2015892 Views on numerologies above 52 GHz**

*Type: other For: Discussion  
 Source: Sony*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **withdrawn**.

**R4-2015893 Views on numerologies above 52 GHz**

*Type: other For: Discussion  
 Source: Sony*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **withdrawn**.

**R4-2016110 Further discussion on numerology and BW for 52.6GHz-71GHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2016299 Subcarrier spacing and minimum channel bandwidth**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

##### 13.2.1.2 Timing considerations [FS\_NR\_52\_to\_71GHz]

**R4-2015991 TP to TR 38.808: Timing considerations for operation between 52.6 and 71 GHz**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2016000 TP to TR 38.808: Timing considerations for operation between 52.6 and 71 GHz**

*Type: pCR For: Approval  
 38.808 v0.0.2  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2016036 TP for NR Rel-17 TR 38.808: Time and synchronization impact**

*Type: pCR For: Approval  
 38.808 v0.0.2  
 Source: Ericsson*

**Abstract:**

Analysis of time and synchronization requirements of TS 38.133

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

##### 13.2.1.3 Phase noise and RF impairments related to response to RAN1 [FS\_NR\_52\_to\_71GHz]

**R4-2014893 Futher considerations on the phase noise for the 60GHz frequency range**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2014976 TP to TR 38.808: On 52.6 to 71 GHz phase noise characteristics, TP to TR and draft LS to RAN1**

*Type: pCR For: Approval  
 38.808 v0.0.2  
 Source: Ericsson*

**Abstract:**

In this paper, we further discuss the phase noise model described in [3] and elaborate more on comparison between characteristics of existing models, new proposed models and state-of-the-art high performance PLL published data.

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2015443 Draft LS: Phase noise and RF impairment considerations**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2015564 On 60 GHz Phase noise and RF impairments**

*Type: discussion For: Approval  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2016298 Phase noise and PTRS**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2016533 on PN model for 60GHz+reply LS RAN1**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

**R4-2015728 Discussion on PTRS for 52 beyond**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

During last RAN4 meeting, RAN4 #96-e, contributions regarding technological impacts at 52.6 GHz and beyond were discussed. Interested companies brought studies on PN, antenna parameters, to name a few and impact of physical layer design, specifically PT-

**Discussion:**

See email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 in R4-2016643.

**Decision:** The document was **noted**.

#### 13.2.2 BS aspect [FS\_NR\_52\_to\_71GHz]

**R4-2016643 Email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (Intel)*

**Discussion:**

The contribution summarized email discussion thread [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2. The email thread was moderated by Jiwoo Kim (Intel) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016982**.

**R4-2016982 Email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (Intel)*

(Replaces R4-2016643)

**Discussion:**

The contribution summarized email discussion thread [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2. The email thread was moderated by Jiwoo Kim (Intel) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016998 WF on FS 52 to 71 GHz**

*Type: other For: Approval  
 Source: Intel*

**Discussion:**

See email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 in R4-2016643.

**Decision:** The document was **approved**.

**R4-2014401 Discussion on the BS requirements for 52.6-71GHz**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

See email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 in R4-2016643.

**Decision:** The document was **noted**.

**R4-2014977 TP to TR 38.808: Addition of technical background information for base station in clause 2 and sub-clause 4.2.6**

*Type: pCR For: Approval  
 38.808 v0.0.2  
 Source: Ericsson*

**Abstract:**

In Annex A of this contribution, text proposal for technical report describing the new proposed model is attached.

**Discussion:**

See email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 in R4-2016643.

**Decision:** The document was **noted**.

**R4-2015200 TP to TR 38.808 BS RF for NR beyond 52.6 GHz**

*Type: pCR For: Approval  
 38.808 v0.0.2  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 in R4-2016643.

**Decision:** The document was **revised to R4-2016995**.

**R4-2016995 TP to TR 38.808 BS RF for NR beyond 52.6 GHz**

*Type: pCR For: Approval  
 38.808 v0.0.2  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2015200)

**Discussion:**

See email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 in R4-2016643.

**Decision:** The document was **approved**.

**R4-2015947 TP to TR 38.808: BS architecture and BS classes for 52-71 GHz range**

*Type: pCR For: Approval  
 38.808 v0.0.2  
 Source: Huawei*

**Abstract:**

This contribution provides TP to TR 38.808 on selected BS aspects for 52.6 – 71 GHz range, including BS architecture and BS classes.

**Discussion:**

See email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 in R4-2016643.

**Decision:** The document was **noted**.

#### 13.2.3 UE aspect [FS\_NR\_52\_to\_71GHz]

**R4-2014975 Further discussion on PA model for B52.6G**

*Type: discussion For: Information  
 Source: vivo*

**Discussion:**

See email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 in R4-2016643.

**Decision:** The document was **noted**.

**R4-2015444 UE RF for NR beyond 52.6 GHz**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 in R4-2016643.

**Decision:** The document was **noted**.

**R4-2015984 On power amplifier aspects for UE in the 52.6-71 GHz range**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this contribution we propose and ACLR range for UEs operating in the 52.6-71 GHz range

**Discussion:**

See email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 in R4-2016643.

**Decision:** The document was **noted**.

**R4-2016371 A Survey on Memory Based PA Models**

*Type: discussion For: Approval  
 Source: Huawei, HiSilicon*

**Abstract:**

In this contributions we will discuss some memory based models that could be suitable candidates.

**Discussion:**

See email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 in R4-2016643.

**Decision:** The document was **noted**.

#### 13.2.4 Others [FS\_NR\_52\_to\_71GHz]

**R4-2014894 Regulatory overview and input for the 60GHz frequency range**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 in R4-2016643.

**Decision:** The document was **noted**.

**R4-2015948 TP to TR 38.808: PA trends and typical Noise Figure values**

*Type: pCR For: Approval  
 38.808 v0.0.2  
 Source: Huawei*

**Abstract:**

Based on the approved WF this contribution provides an updated TP for the PA trends analysis for 52.6 – 71 GHz range. Related TP to TR 38.808 is attached for approval. It shall be noted that the source PA database use for drafting the attached TP was rece

**Discussion:**

See email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 in R4-2016643.

**Decision:** The document was **noted**.

**R4-2014980 TP to TR 38.808: Addition of general RAN4 structure to sub-clause 4.2**

*Type: pCR For: Approval  
 38.808 v0.0.2  
 Source: Ericsson*

**Abstract:**

A common technical report (TR 38.808) has been created to capture background information for RAN1 and RAN4. In this contribution a text proposal is attached with a sub-structure to prepare TR 38.808 to capture RAN4 specific information.

**Discussion:**

See email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 in R4-2016642.

**Decision:** The document was **noted**.

### 13.3 Study on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths [FS\_NR\_eff\_BW\_util]

**R4-2016644 Email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][142] FS\_NR\_eff\_BW\_util. The email thread was moderated by Esther Sienkiewicz (Ericsson Inc.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016983**.

**R4-2016983 Email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2016644)

**Discussion:**

The contribution summarized email discussion thread [97e][142] FS\_NR\_eff\_BW\_util. The email thread was moderated by Esther Sienkiewicz (Ericsson Inc.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016931 WF on Irregular Channel Bandwidths**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **revised to R4-2017833**.

**R4-2017833 WF on Irregular Channel Bandwidths**

*Type: other For: discussion  
 Source: Ericsson*

(Replaces R4-2016931)

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **noted**.

#### 13.3.1 General and work plan [FS\_NR\_eff\_BW\_util]

**R4-2014895 Non-standard spectrum allocations for NR bands**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **noted**.

**R4-2015721 Work Plan for Study on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidth**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution provides description of the work plan for the study on efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidth [1]

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **revised to R4-2016929**.

**R4-2016929 Work Plan for Study on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidth**

*Type: other For: Approval  
 Source: Ericsson*

(Replaces R4-2015721)

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **approved**.

**R4-2015722 TR Skeleton on CH BW not aligned with existing BWs**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Draft TR Skeleton for Study on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **revised to R4-2016930**.

**R4-2016930 TR Skeleton on CH BW not aligned with existing BWs**

*Type: other For: Approval  
 Source: Ericsson*

(Replaces R4-2015722)

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **approved**.

**R4-2016456 Revised SID: Study on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths**

*Type: SID revised For: Information  
 Source: T-Mobile USA, Ericsson*

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **noted**.

#### 13.3.2 Input on operator licensed channel bandwidths in FR1 that do not align with existing NR channel bandwidths [FS\_NR\_eff\_BW\_util]

**R4-2014507 UE Support for Irregular Channel Bandwidths - Options and Constraints**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

This contribution discusses the different cases from UE prospective and provides an analysis of potential solutions and their related constraints to enable irregular channel BW support using existing UE channel BW.

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **noted**.

**R4-2015723 Considerations on Bandwidth Granularity**

*Type: discussion For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution highlighted challenges around adding new channel bandwidths and its proposed to keep the study and work relating to this SI to consider a nominal granularity for new channel bandwidths of which to study

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **noted**.

#### 13.3.3 Evaluation of use of larger channel bandwidths than operator licensed bandwidth [FS\_NR\_eff\_BW\_util]

**R4-2015724 Utilizing larger CBWs for available spectrum**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, further discussion on creating new channel bandwidth by means of utilizing the net wider channel bandwidth with only scheduling a subset of RBs

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **noted**.

**R4-2016111 Discussion on irregular channel bandwidth for NR system**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **noted**.

#### 13.3.4 Evaluation of use of overlapping UE channel bandwidths (from both UE and network perspective) [FS\_NR\_eff\_BW\_util]

**R4-2014487 Handling of Channel Bandwidths That Are Not Multiples of 5MHz**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **noted**.

**R4-2015562 On efficient utilization of licensed spectrum**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **noted**.

**R4-2015713 Overlapping UE channel bandwidths**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **noted**.

##### 13.3.4.1 UE perspective [FS\_NR\_eff\_BW\_util]

**R4-2016201 On the use of overlapping channel bandwidths from UE perspective**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **noted**.

##### 13.3.4.2 Network perspective [FS\_NR\_eff\_BW\_util]

**R4-2016455 Use of 5 MHz overlapping channel BWs to cover spectrum blocks between 5 and 10 MHz**

*Type: discussion For: Approval  
 Source: T-Mobile USA*

**Discussion:**

See email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util in R4-2016644.

**Decision:** The document was **noted**.

#### 13.3.5 Others [FS\_NR\_eff\_BW\_util]

## 14 Rel-17 Work Items for LTE

### 14.1 LTE inter-band Carrier Aggregation for 2 bands DL with 1 band UL [LTE\_CA\_R17\_2BDL\_1BUL]

**R4-2016645 Email discussion summary for [97e][143] LTE\_Baskets**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [97e][143] LTE\_Baskets. The email thread was moderated by Per Lindell (Ericsson Telecomunicazioni SpA) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

#### 14.1.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_2BDL\_1BUL-Core/Perf]

**R4-2016232 Revised WID: Rel17 LTE inter-band CA for 2 bands DL with 1 band UL**

*Type: WID revised For: (not specified)  
 Source: Qualcomm Incorporated*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2016233 Introduction of Rel-17 LTE inter-band CA for 2 bands DL with 1 band UL combinations in TS36.101**

*Type: draftCR For: Endorsement  
 36.101 v16.7.0  
 Source: Qualcomm Incorporated*

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **withdrawn**.

**R4-2016992 Introduction of Rel-17 LTE inter-band CA for 2 bands DL with 1 band UL combinations in TS36.101**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5710 Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2016234 TR 36.717-02-01 Rel-17 LTE inter-band CA for 2 bands DL and 1 band UL CA**

*Type: draft TR For: Agreement  
 36.717-02-01 v0.1.0  
 Source: Qualcomm Incorporated*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **withdrawn**.

#### 14.1.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R17\_2BDL\_1BUL-Core]

#### 14.1.3 UE RF without specific issues [LTE\_CA\_R17\_2BDL\_1BUL-Core]

**R4-2015392 TP for TR 36.717-02-01: CA\_2A-8A**

*Type: pCR For: Approval  
 36.717-02-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **noted**.

### 14.2 LTE inter-band Carrier Aggregation for 3 bands DL with 1 band UL [LTE\_CA\_R17\_3BDL\_1BUL]

**R4-2014067 TP for TR 36.717-03-01: CA\_1-8-41**

*Type: pCR For: Approval  
 36.717-03-01 v0.1.0  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution provides a text proposal on LTE CA band combination CA\_1-8-41 for TR 36.717-03-01 [1]. Only 1 UL is considered.

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

**R4-2014068 TP for TR 36.717-03-01: CA\_1-40-41**

*Type: pCR For: Approval  
 36.717-03-01 v0.1.0  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution provides a text proposal on LTE CA band combination CA\_1-40-41 for TR 36.717-03-01 [1]. Only 1 UL is considered.

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **revised to R4-2016768**.

**R4-2016768 TP for TR 36.717-03-01: CA\_1-40-41**

*Type: pCR For: Approval  
 36.717-03-01 v0.1.0  
 Source: VODAFONE Group Plc*

(Replaces R4-2014068)

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

**R4-2014069 TP for TR 36.717-03-01: CA\_8-40-41**

*Type: pCR For: Approval  
 36.717-03-01 v0.1.0  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution provides a text proposal on LTE CA band combination CA\_8-40-41 for TR 36.717-03-01 [1]. Only 1 UL is considered.

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **revised to R4-2016769**.

**R4-2016769 TP for TR 36.717-03-01: CA\_8-40-41**

*Type: pCR For: Approval  
 36.717-03-01 v0.1.0  
 Source: VODAFONE Group Plc*

(Replaces R4-2014069)

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

#### 14.2.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_3BDL\_1BUL-Core/Perf]

**R4-2016541 Introduction of completed R17 3DL band combinations to TS 36.101**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5709 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2016542 Revised WID for LTE inter-band CA for 3 bands DL with 1 bands UL**

*Type: WID revised For: Agreement  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

#### 14.2.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R17\_3BDL\_1BUL-Core]

#### 14.2.3 UE RF without specific issues [LTE\_CA\_R17\_3BDL\_1BUL-Core]

### 14.3 LTE inter-band Carrier Aggregation for x bands DL (x=4, 5) with 1 band UL

**R4-2014065 TP for TR 36.717-04-01: CA\_1-3-8-41**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution provides a text proposal on LTE CA band combination CA\_1-3-8-41 for TR 36.717-04-01. Only 1 UL is considered.

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **revised to R4-2016767**.

**R4-2016767 TP for TR 36.717-04-01: CA\_1-3-8-41**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: VODAFONE Group Plc*

(Replaces R4-2014065)

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

**R4-2015201 Extension of LTE iterbCA 4/5 WI to include 6 bands**

*Type: discussion For: Approval  
 Source: VODAFONE Group Plc*

**Abstract:**

For LTE inter-band CA the existing work items currently support work on up to 5 bands for the downlink (DL). As there is now a desire to start work on 6 band DL combinations, a suitable work item needs to be identified. This document proposes extending th

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

#### 14.3.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_xBDL\_1BUL-Core]

**R4-2015070 Introduction of LTE inter-band Carrier Aggregation for x bands DL (x=4, 5) with 1 band UL to TS36.101**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5687 Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This is a big CR for the basket work item on LTE CA 4DL/1UL and 5DL/1UL.

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

**R4-2016181 Revised WID: LTE Advanced inter-band CA Rel-17 for x bands DL (x=4, 5) with 1 band UL**

*Type: WID revised For: Endorsement  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2016182 Updated scope of TR: LTE inter-band CA for 4/5 bands DL with 1 band UL**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

**R4-2016183 TR 36.717-04-01 v0.2.0**

*Type: draft TR For: Agreement  
 36.717-04-01 v0.2.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **agreed**.

#### 14.3.2 UE RF with 4 LTE bands CA [LTE\_CA\_R17\_xBDL\_1BUL-Core]

**R4-2015393 Draft CR to 36.101 to add configuration CA\_1A-3A-8A-40C**

*Type: draftCR For: Endorsement  
 36.101 v16.7.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add configuration CA\_1A-3A-8A-40C

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **endorsed**.

**R4-2015394 Draft CR to 36.101 to add CA\_1A-3C-7A-8A with UL CA\_3C**

*Type: draftCR For: Endorsement  
 36.101 v16.7.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add configuration CA\_1A-3C-7A-8A with UL CA\_3C

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **endorsed**.

**R4-2015395 TP for TR 36.717-04-01: CA\_1A-7A-8A-38A**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **revised to R4-2016770**.

**R4-2016770 TP for TR 36.717-04-01: CA\_1A-7A-8A-38A**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015395)

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

**R4-2015396 TP for TR 36.717-04-01: CA\_1A-8A-20A-38A**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **revised to R4-2016771**.

**R4-2016771 TP for TR 36.717-04-01: CA\_1A-8A-20A-38A**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015396)

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

**R4-2015397 TP for TR 36.717-04-01: CA\_3A-8A-20A-38A**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **revised to R4-2016772**.

**R4-2016772 TP for TR 36.717-04-01: CA\_3A-8A-20A-38A**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015397)

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

**R4-2015398 TP for TR 36.717-04-01: CA\_1A-3C-8A-38A with UL CA\_3C**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **revised to R4-2016773**.

**R4-2016773 TP for TR 36.717-04-01: CA\_1A-3C-8A-38A with UL CA\_3C**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015398)

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

**R4-2015399 TP for TR 36.717-04-01: CA\_1A-3C-8A-20A with UL CA\_3C**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **revised to R4-2016774**.

**R4-2016774 TP for TR 36.717-04-01: CA\_1A-3C-8A-20A with UL CA\_3C**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015399)

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

**R4-2015400 Updated TP for TR 36.717-04-01: CA\_1A-3C-20A-38A with UL CA\_3C**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **revised to R4-2016775**.

**R4-2016775 Updated TP for TR 36.717-04-01: CA\_1A-3C-20A-38A with UL CA\_3C**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015400)

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

**R4-2015402 Updated TP for TR 36.717-04-01: CA\_2A-5A-7A-66A-66A**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

#### 14.3.3 UE RF with 5 LTE bands CA [LTE\_CA\_R17\_xBDL\_1BUL-Core]

**R4-2015401 TP for TR 36.717-04-01: CA\_1A-3A-7A-8A-40A / CA\_1A-3A-7A-8A-40C**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **revised to R4-2016776**.

**R4-2016776 TP for TR 36.717-04-01: CA\_1A-3A-7A-8A-40A / CA\_1A-3A-7A-8A-40C**

*Type: pCR For: Approval  
 36.717-04-01 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2015401)

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **approved**.

### 14.4 LTE inter-band Carrier Aggregation for 2 bands DL with 2 band UL [LTE\_CA\_R17\_2BDL\_2BUL]

#### 14.4.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_2BDL\_2BUL-Core]

**R4-2016488 Introduction of completed R17 2DL2UL band combinations to TS 36.101**

*Type: draftCR For: Endorsement  
 36.101 v16.7.0  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **withdrawn**.

**R4-2016489 Revised WID for LTE inter-band CA for 2 bands DL with 2 bands UL**

*Type: WID revised For: Endorsement  
 Source: Huawei, HiSilicon*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **withdrawn**.

#### 14.4.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R17\_2BDL\_2BUL-Core]

#### 14.4.3 UE RF without specific issues [LTE\_CA\_R17\_2BDL\_2BUL-Core]

### 14.5 LTE inter-band Carrier Aggregation for x bands DL (x= 3, 4, 5) with 2 band UL

#### 14.5.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_xBDL\_2BUL-Core]

**R4-2014300 TR 36.717-03-02 v0.2.0 TR Update for LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL in Rel-17**

*Type: draft TR For: Agreement  
 36.717-03-02 v0.2.0  
 Source: LG Electronics Polska*

**Discussion:**

See email discussion summary for [97e][143] LTE\_Baskets in R4-2016645.

**Decision:** The document was **withdrawn**.

**R4-2014301 Revised WID on LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL in Rel-17**

*Type: WID revised For: (not specified)  
 Source: LG Electronics Polska*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **endorsed**.

**R4-2014302 Introduction of LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL to TS36.101**

*Type: CR For: Agreement  
 36.101 v16.7.0 CR-5680 Cat: B (Rel-17)  
  
 Source: LG Electronics Polska*

**Discussion:**

The document was subject for email agreement after the meeting.

**Decision:** The document was **withdrawn**.

#### 14.5.2 UE RF with MSD [LTE\_CA\_R17\_xBDL\_2BUL-Core]

#### 14.5.3 UE RF without MSD [LTE\_CA\_R17\_xBDL\_2BUL-Core]

### 14.6 RRM for LTE CA basket WIs [LTE\_CA\_R17\_xxxx]

#### 14.6.1 RRM Core (36.133) [LTE\_CA\_R17\_xxxx-Core]

#### 14.6.2 RRM Perf (36.133) [LTE\_CA\_R17\_xxxx-Perf]

**R4-2016646 Email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2**

*Type: other For: discussion  
 Source: Moderator (Ercisson)*

**Discussion:**

The contribution summarized email discussion thread [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2. The email thread was moderated by Chunhui Zhang (Nanjing Ericsson Panda Com Ltd) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016984**.

**R4-2016984 Email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2**

*Type: other For: discussion  
 Source: Moderator (Ercisson)*

(Replaces R4-2016646)

**Discussion:**

The contribution summarized email discussion thread [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2. The email thread was moderated by Chunhui Zhang (Nanjing Ericsson Panda Com Ltd) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016932 WF on A-MPR simulation assumption for B24 CAT-M1/M2 device**

*Type: other For: discussion  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **approved**.

### 14.7 New WID on Additional LTE bands for UE category M1&M2 and/or NB1&NB2 in Rel-17 [LTE\_bands\_R17\_M1\_M2\_NB1\_NB2]

#### 14.7.1 Rapporteur Input (WID/TR/CR) [LTE\_bands\_R17\_M1\_M2\_NB1\_NB2-Core]

**R4-2016266 CR of adding LTE B24 for UE category NB1 in R17**

*Type: draftCR For: Endorsement  
 36.307 v13.12.0  
 Source: Ericsson, Ligado Networks*

**Abstract:**

UE cat. NB1 was introduced by REL-13.

In REL-17, requirements for additional bands have to be added UE category NB1 in a REL-independent way starting from REL-13

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **endorsed**.

**R4-2016267 CR of adding LTE B24 for UE category NB1 in R17**

*Type: draftCR For: Endorsement  
 36.307 v14.9.0  
 Source: Ericsson, Ligado Networks*

**Abstract:**

CR of adding LTE B24 for UE category NB1 in R17

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **endorsed**.

**R4-2016268 CR of adding LTE B24 for UE category NB1 in R17**

*Type: draftCR For: Endorsement  
 36.307 v15.6.0  
 Source: Ericsson, Ligado Networks*

**Abstract:**

CR of adding LTE B24 for UE category NB1 in R17

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **endorsed**.

**R4-2016269 CR of adding LTE B24 for UE category NB1 in R17**

*Type: draftCR For: Endorsement  
 36.307 v16.2.0  
 Source: Ericsson, Ligado Networks*

**Abstract:**

CR of adding LTE B24 for UE category NB1 in R17

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **endorsed**.

**R4-2016270 CR of adding LTE B24 for UE category NB1/NB2 in R17**

*Type: draftCR For: Endorsement  
 36.101 v16.7.0  
 Source: Ericsson, Ligado Networks*

**Abstract:**

Adding B24 for NB1/NB2

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **endorsed**.

**R4-2016271 CR of adding LTE B24 for UE category NB1/NB2 in R17**

*Type: draftCR For: Endorsement  
 36.104 v16.7.0  
 Source: Ericsson, Ligado Networks*

**Abstract:**

Adding B24 for NB1/NB2

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **endorsed**.

**R4-2016272 CR of adding LTE B24 for UE category NB1/NB2 in R17**

*Type: draftCR For: Endorsement  
 36.133 v16.7.0  
 Source: Ericsson, Ligado Networks*

**Abstract:**

Adding B24 for NB1/NB2

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **endorsed**.

**R4-2016274 CR of adding LTE B24 for UE category NB1/NB2 in R17**

*Type: draftCR For: Endorsement  
 37.104 v16.7.0  
 Source: Ericsson, Ligado Networks*

**Abstract:**

Adding B24 for NB1/NB2

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **endorsed**.

**R4-2016276 CR of adding LTE B24 for UE category NB2 in R17**

*Type: draftCR For: Endorsement  
 36.307 v14.9.0  
 Source: Ericsson, Ligado Networks*

**Abstract:**

UE cat. NB2 was introduced by REL-14 WI.

In REL-17, requirements for additional bands have to be added UE category NB2 in a REL-independent way starting from REL-14

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **endorsed**.

**R4-2016277 CR of adding LTE B24 for UE category NB2 in R17**

*Type: draftCR For: Endorsement  
 36.307 v15.6.0  
 Source: Ericsson, Ligado Networks*

**Abstract:**

CR of adding LTE B24 for UE category NB2 in R17

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **endorsed**.

**R4-2016278 CR of adding LTE B24 for UE category NB2 in R17**

*Type: draftCR For: Endorsement  
 36.307 v16.2.0  
 Source: Ericsson, Ligado Networks*

**Abstract:**

CR of adding LTE B24 for UE category NB2 in R17

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **endorsed**.

#### 14.7.2 RF [LTE\_bands\_R17\_M1\_M2\_NB1\_NB2-Core]

**R4-2015794 Band 24 Cat M1/M2 A-MPR assumptions**

*Type: discussion For: Approval  
 36.101 v..  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **noted**.

**R4-2016279 Further consideration of A-MPR simulation assumption for B24**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

in this paper, we present our view on the new PA model for the LTE Cat-M1/M2 device and our view on the simulation work later on

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **noted**.

#### 14.7.3 Others [LTE\_bands\_R17\_M1\_M2\_NB1\_NB2-Perf]

**R4-2016273 CR of adding LTE B24 for UE category NB1/NB2 in R17**

*Type: draftCR For: Endorsement  
 36.141 v16.7.0  
 Source: Ericsson, Ligado Networks*

**Abstract:**

Adding B24 for NB1/NB2

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **endorsed**.

**R4-2016275 CR of adding LTE B24 for UE category NB1/NB2 in R17**

*Type: draftCR For: Endorsement  
 37.141 v16.7.0  
 Source: Ericsson, Ligado Networks*

**Abstract:**

Adding B24 for NB1/NB2

**Discussion:**

See email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 in R4-2016646.

**Decision:** The document was **endorsed**.

### 14.8 Modification of LTE Band 24 specifications to comply with updated regulatory emission limits [LTE\_B24\_mod]

#### 14.8.1 General and rapporteur input [LTE\_B24\_mod-Core]

#### 14.8.2 UE RF [LTE\_B24\_mod-Core]

**R4-2014161 Band 24 UE additional emissions requirements, A-MPR scenarios and assumptions, and UE REFSENS**

*Type: discussion For: Approval  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **noted**.

#### 14.8.3 BS RF [LTE\_B24\_mod-Core]

**R4-2016197 Draft CR to 36.104: Correction to Band 24 requirements (Rel-10)**

*Type: draftCR For: Endorsement  
 36.104 v16.7.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

There are two regulatory updates related to BS operation in Band 24 which need to be reflected in 36.104:

Regulations limits the downlink power to 9.8 dBW/MHz and limits transmission between 1526 – 1536 MHz

OOBE emission limits have been modified.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016888**.

**R4-2016888 Draft CR to 36.104: Correction to Band 24 requirements (Rel-10)**

*Type: draftCR For: Endorsement  
 36.104 v16.7.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016197)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2016198 Draft CR to 36.104: Correction to Band 24 requirements (Rel-10)**

*Type: draftCR For: Endorsement  
 36.141 v16.7.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

There are two regulatory updates related to BS operation in Band 24 which need to be reflected in 36.104:

Regulations limits the downlink power to 9.8 dBW/MHz and limits transmission between 1526 – 1536 MHz

OOBE emission limits have been modified.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016889**.

**R4-2016889 Draft CR to 36.104: Correction to Band 24 requirements (Rel-10)**

*Type: draftCR For: Endorsement  
 36.141 v16.7.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016198)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2016199 Draft CR to 37.104: Correction to Band 24 requirements (Rel-10)**

*Type: draftCR For: Endorsement  
 37.104 v16.7.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

There are two regulatory updates related to BS operation in Band 24 which need to be reflected in 36.104:

Regulations limits the downlink power to 9.8 dBW/MHz and limits transmission between 1526 – 1536 MHz

OOBE emission limits have been modified.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016890**.

**R4-2016890 Draft CR to 37.104: Correction to Band 24 requirements (Rel-10)**

*Type: draftCR For: Endorsement  
 37.104 v16.7.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016199)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2016200 Draft CR to 36.104: Correction to Band 24 requirements (Rel-10)**

*Type: draftCR For: Endorsement  
 37.141 v16.7.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

There are two regulatory updates related to BS operation in Band 24 which need to be reflected in 36.104:

Regulations limits the downlink power to 9.8 dBW/MHz and limits transmission between 1526 – 1536 MHz

OOBE emission limits have been modified.

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016891**.

**R4-2016891 Draft CR to 36.104: Correction to Band 24 requirements (Rel-10)**

*Type: draftCR For: Endorsement  
 37.141 v16.7.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2016200)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

#### 14.8.4 RRM and others [LTE\_B24\_mod-Core/Perf]

**R4-2014191 Draft CR for 37.105: Corrections related to Band 24 regulatory updates (Rel-15)**

*Type: draftCR For: Endorsement  
 37.105 v15.10.0  
 Source: Ligado Networks*

**Abstract:**

Regulatory requirements for Band 24 were updated in April, 2020

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016885**.

**R4-2016885 Draft CR for 37.105: Corrections related to Band 24 regulatory updates (Rel-15)**

*Type: draftCR For: Endorsement  
 37.105 v15.10.0  
 Source: Ligado Networks*

(Replaces R4-2014191)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014192 Draft CR for TS 37.105 Corrections related to Band 24 regulatory updates (Rel-16)**

*Type: draftCR For: Endorsement  
 37.105 v16.5.0  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **withdrawn**.

**R4-2014193 Draft CR for TS 37.105 Corrections related to Band 24 regulatory updates (Rel-17)**

*Type: draftCR For: Endorsement  
 37.105 v16.5.0  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **withdrawn**.

**R4-2014194 Draft CR for 37.145-1: Corrections related to Band 24 regulatory updates (Rel-13)**

*Type: draftCR For: Endorsement  
 37.145-1 v13.10.0  
 Source: Ligado Networks*

**Abstract:**

Regulatory requirements for Band 24 were updated in April, 2020

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016886**.

**R4-2016886 Draft CR for 37.145-1: Corrections related to Band 24 regulatory updates (Rel-13)**

*Type: draftCR For: Endorsement  
 37.145-1 v13.10.0  
 Source: Ligado Networks*

(Replaces R4-2014194)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014195 Draft CR for TS 37.145-1 Corrections related to Band 24 regulatory updates (Rel-14)**

*Type: draftCR For: Endorsement  
 37.145-1 v14.8.0  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **withdrawn**.

**R4-2014196 Draft CR for TS 37.145-1 Corrections related to Band 24 regulatory updates (Rel-15)**

*Type: draftCR For: Endorsement  
 37.145-1 v15.7.0  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **withdrawn**.

**R4-2014197 Draft CR for TS 37.145-1 Corrections related to Band 24 regulatory updates (Rel-16)**

*Type: draftCR For: Endorsement  
 37.145-1 v16.4.0  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **withdrawn**.

**R4-2014198 Draft CR for TS 37.145-1 Corrections related to Band 24 regulatory updates (Rel-17)**

*Type: draftCR For: Endorsement  
 37.145-1 v16.4.0  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **withdrawn**.

**R4-2014199 Draft CR for 37.145-2: Corrections related to Band 24 regulatory updates (Rel-15)**

*Type: draftCR For: Endorsement  
 37.145-2 v15.8.0  
 Source: Ligado Networks*

**Abstract:**

Regulatory requirements for Band 24 were updated in April, 2020

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **revised to R4-2016887**.

**R4-2016887 Draft CR for 37.145-2: Corrections related to Band 24 regulatory updates (Rel-15)**

*Type: draftCR For: Endorsement  
 37.145-2 v15.8.0  
 Source: Ligado Networks*

(Replaces R4-2014199)

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **endorsed**.

**R4-2014200 Draft CR for TS 37.145-2 Corrections related to Band 24 regulatory updates (Rel-16)**

*Type: draftCR For: Endorsement  
 37.145-2 v16.5.0  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **withdrawn**.

**R4-2014201 Draft CR for TS 37.145-2 Corrections related to Band 24 regulatory updates (Rel-17)**

*Type: draftCR For: Endorsement  
 37.145-2 v16.5.0  
 Source: Ligado Networks*

**Discussion:**

See email discussion summary for [97e][131] NR\_LTE\_band\_n24 in R4-2016633.

**Decision:** The document was **withdrawn**.

## 15 Rel-17 Study Items for LTE

### 15.1 High-power UE operation for fixed-wireless/vehicle-mounted use cases in LTE bands 5 and 12 and NR band n71 [FS\_LTE\_NR\_HPUE\_FWVM]

**R4-2016647 Email discussion summary for [97e][145] FS\_LTE\_NR\_HPUE\_FWVM**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [97e][145] FS\_LTE\_NR\_HPUE\_FWVM. The email thread was moderated by Man Hung Ng (Nokia France) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016985**.

**R4-2016985 Email discussion summary for [97e][145] FS\_LTE\_NR\_HPUE\_FWVM**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2016647)

**Discussion:**

The contribution summarized email discussion thread [97e][145] FS\_LTE\_NR\_HPUE\_FWVM. The email thread was moderated by Man Hung Ng (Nokia France) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016933 Updated Work Plan for Study on High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

See email discussion summary for [97e][145] FS\_LTE\_NR\_HPUE\_FWVM in R4-2016647.

**Decision:** The document was **approved**.

**R4-2016934 TP to TR 37.880: Coexistence Simulation Results and Observations for High-power UE operation Vs NB-IoT standalone operation**

*Type: pCR For: Approval  
 37.880 v0.0.1  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

See email discussion summary for [97e][145] FS\_LTE\_NR\_HPUE\_FWVM in R4-2016647.

**Decision:** The document was **approved**.

#### 15.1.1 General

**R4-2014479 TR 37.880 V0.1.0: High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Updated TR for Study on High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71.

**Discussion:**

See email discussion summary for [97e][145] FS\_LTE\_NR\_HPUE\_FWVM in R4-2016647.

**Decision:** The document was **agreed**.

#### 15.1.2 Coexistence study

**R4-2014480 Coexistence Simulation Results for High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution provides the coexistence simulation results for this scenario according to the agreed assumptions.

**Discussion:**

See email discussion summary for [97e][145] FS\_LTE\_NR\_HPUE\_FWVM in R4-2016647.

**Decision:** The document was **noted**.

#### 15.1.3 UE RF

**R4-2014481 TP to TR 37.880: High-power UE transmitter/receiver architecture for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71**

*Type: pCR For: Approval  
 37.880 v0.0.1  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution provides a TP to include the UE transmitter/receiver architecture in TR 37.880.

**Discussion:**

See email discussion summary for [97e][145] FS\_LTE\_NR\_HPUE\_FWVM in R4-2016647.

**Decision:** The document was **withdrawn**.

## 16 Liaison and output to other groups

### 16.1 R17 related

### 16.2 Others

## 17 Revision of the Work Plan

### 17.1 Simplification of band combinations in RAN4 specifications

**R4-2016648 Email discussion summary for [97e][146] BC\_simplification**

*Type: other For: discussion  
 Source: Moderator (NTT DOCOMO)*

**Discussion:**

The contribution summarized email discussion thread [97e][146] BC\_simplification. The email thread was moderated by Yuta Oguma (NTT DOCOMO INC.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **revised to R4-2016986**.

**R4-2016986 Email discussion summary for [97e][146] BC\_simplification**

*Type: other For: discussion  
 Source: Moderator (NTT DOCOMO)*

(Replaces R4-2016648)

**Discussion:**

The contribution summarized email discussion thread [97e][146] BC\_simplification. The email thread was moderated by Yuta Oguma (NTT DOCOMO INC.) and treated during Main session chaired by Xiang (Steven) Chen (Apple (UK) Limited).

**Decision:** The document was **noted**.

**R4-2016935 WF on rules on request sheet and notations of CA/DC configurations**

*Type: other For: discussion  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **approved**.

**R4-2016936 WF on updating cover sheet of request sheet**

*Type: other For: discussion  
 Source: NTT DOCOMO.,INC.*

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **approved**.

**R4-2016940 WF on MSD test point specification methodology for LTE CA**

*Type: other For: discussion  
 Source: Skyworks*

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **approved**.

**R4-2016941 WF on alternative to creating new BCSs**

*Type: other For: discussion  
 Source: T-Mobile USA*

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **revised to R4-2017836**.

**R4-2017836 WF on alternative to creating new BCSs**

*Type: other For: discussion  
 Source: T-Mobile USA*

(Replaces R4-2016941)

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **revised to R4-2017843**.

**R4-2017843 WF on alternative to creating new BCSs**

*Type: other For: discussion  
 Source: T-Mobile USA*

(Replaces R4-2017836)

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **approved**.

**R4-2014482 On a request sheet/WID template for band combinations**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discuss one remaining issue on request sheet template for band combinations.

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **noted**.

**R4-2014598 More on an alternative to creating new BCSs**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This paper addresses raised concerns over the discussion on R4-2010062 in RAN4#96-e.

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **noted**.

**R4-2014959 Further considerations on simplification of band combination**

*Type: discussion For: Approval  
 Source: ZTE Corporation*

**Abstract:**

In this contribution, we provide our considerations on how to simplify the configuration tables and the detail of specification splitting.

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **noted**.

**R4-2014960 CR to TS 38.101-1 on simplification for inter-band CA configuration**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0524 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

In current spec, most of the channel bandwidth for NR band with single carrier is described very cumbersome because of the triple SCSs of {15kHz, 30kHz, 60kHz}. To simplify the NR configuration table, a bit map to represent the different SCS values for the NR channel bandwidth is introduced. The size of configuration table is greatly reduced accordingly.

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **revised to R4-2016937**.

**R4-2016937 CR to TS 38.101-1 on simplification for inter-band CA configuration**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0524 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

(Replaces R4-2014960)

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **agreed**.

**R4-2014961 CR to TS 38.101-2 on simplification for inter-band CA configuration**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0283 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

In current spec, most of the channel bandwidth for NR band with single carrier is described very cumbersome because of the duple SCSs of {60kHz ,120kHz}. To simplify the NR configuration table, a bit map to represent the different SCS values for the NR channel bandwidth is introduced. The size of configuration table is greatly reduced accordingly.

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **revised to R4-2016938**.

**R4-2016938 CR to TS 38.101-2 on simplification for inter-band CA configuration**

*Type: CR For: Agreement  
 38.101-2 v16.5.0 CR-0283 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

(Replaces R4-2014961)

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **agreed**.

**R4-2014962 CR to TS 38.101-3 on simplification for inter-band CA configuration between FR1 and FR2**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0383 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

In current spec, most of the channel bandwidth for NR band with single carrier is described very cumbersome because of the triple SCSs of {15kHz, 30kHz, 60kHz } in FR1 and the duple SCSs of {60kHz, 120kHz} in FR2. To simplify the NR configuration table, a bit map to represent the different SCS values for the NR channel bandwidth is introduced. The size of configuration table for inter-band CA between FR1 and FR2 is greatly reduced accordingly.

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **revised to R4-2016939**.

**R4-2016939 CR to TS 38.101-3 on simplification for inter-band CA configuration between FR1 and FR2**

*Type: CR For: Agreement  
 38.101-3 v16.5.0 CR-0383 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

(Replaces R4-2014962)

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **agreed**.

**R4-2015320 Further consideration on simplification of band configuration**

*Type: other For: Approval  
 Source: NTT DOCOMO INC.*

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **noted**.

**R4-2015546 To update the coversheet of Excel table based on the Rel-17 band combination basket WI**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **noted**.

**R4-2016007 LTE Rel**

*Type: discussion For: Approval  
 36.101 v..  
 Source: Skyworks Solutions Inc.*

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **noted**.

**R4-2016297 CA/DC Band configurations notations and usage in 3GPP**

*Type: discussion For: Approval  
 Source: Apple*

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **noted**.

**R4-2016453 An alternative to creating new BCSs**

*Type: discussion For: Approval  
 Source: T-Mobile USA, Deutsche Telekom, AT&T, TELUS, Bell Mobility, Rogers Communications, Telstra, Telecom Italia, KDDI, Vodafone, BT plc, Ericsson*

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **noted**.

**R4-2016454 Draft CR for 38.101-1: Introduction of BCS4**

*Type: draftCR For: Endorsement  
 38.101-1 v16.5.0  
 Source: T-Mobile USA*

**Abstract:**

The number of bandwidth combination sets is growing too large to be manageable.

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **not pursued**.

**R4-2016457 NR-CA and NR-DC 3 band requests and fallbacks**

*Type: discussion For: Approval  
 Source: T-Mobile USA, TELUS, Bell Mobility, AT&T*

**Discussion:**

See email discussion summary for [97e][146] BC\_simplification in R4-2016648.

**Decision:** The document was **noted**.

### 17.2 R17 new proposals

#### 17.2.1 Spectrum related

**R4-2015285 New basket WID on bands with UL-MIMO PC3**

*Type: WID new For: Information  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

**R4-2015909 New WI: Specification of band n67**

*Type: WID new For: Information  
 Source: Ericsson*

**Abstract:**

This new WI is introduced band n67 which is refarmed LTE band 67

**Decision:** The document was **not treated**.

**R4-2016543 New basket WID NR\_PC2\_CA\_R17\_intra**

*Type: WID new For: Information  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

**R4-2017819 New WID: Introduction of BCS4**

*Type: WID new For: discussion  
 Source: T-Mobile USA*

**Decision:** The document was **not treated**.

**R4-2017820 Motivation for BCS4**

*Type: discussion For: discussion  
 Source: T-Mobile USA*

**Decision:** The document was **not treated**.

#### 17.2.2 Non-spectrum related

**R4-2014352 Motivation for new WI on air-to-ground network for NR**

*Type: WID new For: Information  
 Source: CMCC*

**Decision:** The document was **not treated**.

**R4-2014353 New WID on air-to-ground network for NR**

*Type: WID new For: Information  
 Source: CMCC*

**Decision:** The document was **not treated**.

**R4-2014594 Proposal to extend R17 FeRRM WI scope**

*Type: discussion For: Information  
 Source: Apple*

**Decision:** The document was **not treated**.

**R4-2015115 Discssion on EMC Test Simplification for Rel-17 EMC enhancement**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion paper on EMC test simplification for Rel 17 EMC enhancement

**Decision:** The document was **not treated**.

**R4-2015116 New WID proposal on RAN4 Rel-17 EMC enhancement**

*Type: WID new For: Information  
 Source: Ericsson, ZTE*

**Abstract:**

Proposal on a WID for Rel-17 EMC enhancement

**Decision:** The document was **not treated**.

**R4-2015254 [UE EMC] Further discussion on UE EMC enhancement**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision:** The document was **not treated**.

**R4-2015670 New objectives for Rel-17 demodulation performance work item**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

**R4-2016002 CRS-IC requirements for LTE-NR coexistence scenario**

*Type: other For: Information  
 Source: Intel Corporation*

**Decision:** The document was **not treated**.

**R4-2016180 Email summary of UE and BS EMC discussion**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This document summarizes discussion on EMC on the RAN draft reflector

**Decision:** The document was **not treated**.

**R4-2016230 Motivation for WI: NR FR1 UE SA and EN-DC TRP and TRS**

*Type: discussion For: Information  
 Source: vivo*

**Decision:** The document was **not treated**.

**R4-2016231 New WID: NR FR1 UE SA and EN-DC TRP and TRS**

*Type: WID new For: Information  
 Source: vivo, OPPO, CMCC, CAICT, Rohde & Schwarz*

**Decision:** The document was **not treated**.

### 17.3 Others

## 18 Any other business

**R4-2014327 LTE/NR spectrum sharing in Band 40/n40**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0408 rev 2 Cat: B (Rel-17)  
  
 Source: Reliance Jio*

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in B40/n40 band

**Decision:** The document was **revised to R4-2016942**.

**R4-2016942 LTE/NR spectrum sharing in Band 40/n40**

*Type: CR For: Agreement  
 38.101-1 v16.5.0 CR-0408 rev 3 Cat: B (Rel-17)  
  
 Source: Reliance Jio*

(Replaces R4-2014327)

**Decision:** The document was **agreed**.

**R4-2014328 LTE/NR spectrum sharing in Band 40/n40**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0214 rev 2 Cat: B (Rel-17)  
  
 Source: Reliance Jio*

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in B40/n40 band

**Decision:** The document was **revised to R4-2016943**.

**R4-2016943 LTE/NR spectrum sharing in Band 40/n40**

*Type: CR For: Agreement  
 38.104 v16.5.0 CR-0214 rev 3 Cat: B (Rel-17)  
  
 Source: Reliance Jio*

(Replaces R4-2014328)

**Decision:** The document was **agreed**.

**R4-2014329 LTE/NR spectrum sharing in Band 40/n40**

*Type: CR For: Agreement  
 38.307 v16.4.0 CR-0024 rev 2 Cat: B (Rel-17)  
  
 Source: Reliance Jio*

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in B40/n40 band

**Decision:** The document was **revised to R4-2016944**.

**R4-2016944 LTE/NR spectrum sharing in Band 40/n40**

*Type: CR For: Agreement  
 38.307 v16.4.0 CR-0024 rev 3 Cat: B (Rel-17)  
  
 Source: Reliance Jio*

(Replaces R4-2014329)

**Decision:** The document was **agreed**.

## 19 Close of the E-meeting

The Chairman Steven Chen (Apple) closed the meeting on RAN4 reflector on13/11/2020. The following document numbers were reserved for sessions but not used.

**R4-2017391 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2017392 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2017393 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2017394 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2017395 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2017396 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2017397 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2017398 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2017648 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017652 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017679 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not concluded**.

**R4-2017690 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017691 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017692 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017693 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017694 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017695 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017696 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017698 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017699 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017700 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017701 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017702 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017703 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017704 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017705 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017706 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017707 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017708 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017709 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017710 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017711 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017712 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017713 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017714 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017715 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017716 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017717 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017718 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017719 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017720 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017721 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017722 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017723 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017724 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017725 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017726 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017727 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017728 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017729 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017730 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017731 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017732 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017733 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017734 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017735 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017736 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017737 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017738 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017739 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017740 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017741 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017742 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017743 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017744 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017745 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017746 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017747 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017748 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017749 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017750 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017751 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017752 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017753 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017754 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017755 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017756 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017757 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017758 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017759 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017760 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017761 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017762 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017763 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017764 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017765 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017766 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017767 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017768 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017769 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017770 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017771 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017772 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017773 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017774 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017775 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017776 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017777 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017778 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017779 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017780 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017781 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017782 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017783 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017784 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017785 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017786 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017787 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017788 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017789 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017790 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017791 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017792 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017793 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017794 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017795 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017796 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017797 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017798 (reserved)**

*Type: other For: discussion  
 Source: BS RF Session*

**Decision:** The document was **not treated**.

**R4-2017848 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017849 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017850 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017851 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017852 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017853 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017854 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017855 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017856 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017857 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017858 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017859 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017860 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017861 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017862 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017863 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017864 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017865 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017866 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017867 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017868 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017869 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017870 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017871 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017872 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017873 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017874 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017875 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017876 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017877 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017878 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017879 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017880 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017881 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017882 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017883 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017884 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017885 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017886 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017887 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017888 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017889 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017890 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017891 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017892 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017893 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017894 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017895 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017896 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017897 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017898 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017899 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017900 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017901 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017902 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017903 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017904 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017905 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017906 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017907 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017908 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017909 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017910 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017911 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017912 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017913 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017914 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017915 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017916 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017917 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017918 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017919 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017920 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017921 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017922 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017923 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017924 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017925 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017926 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017927 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017928 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017929 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017930 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017931 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017932 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017933 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017934 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017935 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017936 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017937 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017938 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017939 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017940 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017941 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017942 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017943 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017944 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017945 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017946 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017947 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017948 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017949 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017950 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017951 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017952 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017953 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017954 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017955 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017956 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017957 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017958 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017959 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017960 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017961 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017962 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017963 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017964 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017965 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017966 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017967 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017968 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017969 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017970 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017971 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017972 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017973 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017974 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017975 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017976 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017977 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017978 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017979 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017980 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017981 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017982 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017983 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017984 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017985 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017986 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017987 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017988 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017989 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017990 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017991 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017992 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017993 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017994 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017995 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017996 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017997 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017998 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2017999 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2018000 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2018001 (reserved)**

*Type: other For: discussion  
 Source: Main session*

**Decision:** The document was **not treated**.

**R4-2018005 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018006 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018007 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018008 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018009 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018010 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018011 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018012 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018013 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018014 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018015 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018016 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018017 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018018 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018019 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018020 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018021 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018022 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018023 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018024 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018025 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018026 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018027 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018028 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018029 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018030 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018031 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018032 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018033 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018034 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018035 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018036 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018037 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018038 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018039 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018040 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018041 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018042 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018043 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018044 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018045 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018046 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018047 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018048 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018049 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018050 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018051 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018052 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018053 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

**R4-2018054 (reserved)**

*Type: other For: discussion  
 Source: RRM Session*

**Decision:** The document was **not treated**.

Report prepared by: MCC

## Annex A: Contribution documents and status

### A1: List of TDocs

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Document | Title | Source | Decision | Replaces | Replaced by |
| R4-2014000 | Agenda for RAN4 #97-e | Apple (UK) Limited | approved |  |  |
| R4-2014001 | RAN4#96-e Meeting Report | ETSI MCC | approved |  |  |
| R4-2014002 | gNB requirements for NR positioning | ZTE Corporation | noted |  |  |
| R4-2014003 | UE Rx-Tx measurements | ZTE Corporation | noted |  |  |
| R4-2014004 | Measurement period for PRS-RSTD | ZTE Corporation | withdrawn |  |  |
| R4-2014005 | New gap patterns for PRS measurements | ZTE Corporation | noted |  |  |
| R4-2014006 | Requirements for PRS-RSRP measurements | ZTE Corporation | noted |  |  |
| R4-2014007 | Accuracy requirements for PRS-RSRP measurements | ZTE Corporation | noted |  |  |
| R4-2014008 | [draft CR] 2-step RACH test case | ZTE Corporation | revised |  | R4-2017256 |
| R4-2014009 | Scope of test cases for IAB-MTs | ZTE Corporation | withdrawn |  |  |
| R4-2014010 | Test cases for applicable timing for PL RS activated by MAC-CE | ZTE Corporation | noted |  |  |
| R4-2014011 | [draft CR] Test cases for applicable timing for PL RS activated by MAC-CE | ZTE Corporation | postponed |  |  |
| R4-2014012 | Remaining issues in intra and inter-frequency measurements | ZTE Corporation | noted |  |  |
| R4-2014013 | Remaining issues on SCell activation in NR-U | ZTE Corporation | noted |  |  |
| R4-2014014 | Definition of an available reference cell | ZTE Corporation | noted |  |  |
| R4-2014015 | Update of Noc for NR operating bands in FR2 | ANRITSU LTD | agreed |  |  |
| R4-2014016 | Update of Noc for NR operating bands in FR2 | ANRITSU LTD | agreed |  |  |
| R4-2014017 | RB allocation and Noc level in RLM Test cases | ANRITSU LTD | revised |  | R4-2017044 |
| R4-2014018 | RB allocation and Noc level in RLM Test cases | ANRITSU LTD | agreed |  |  |
| R4-2014019 | Update FR2 event-triggered reporting Test cases in A.5.6, A.7.6 | ANRITSU LTD | agreed |  |  |
| R4-2014020 | Update FR2 event-triggered reporting Test cases in A.5.6, A.7.6 | ANRITSU LTD | agreed |  |  |
| R4-2014021 | 240kHz SSB SCS Configuration for FR2 SS-RSRP Test cases | ANRITSU LTD | agreed |  |  |
| R4-2014022 | 240kHz SSB SCS Configuration for FR2 SS-RSRP Test cases | ANRITSU LTD | agreed |  |  |
| R4-2014023 | Correct UE beam assumption for Test Cases in A.5.6 | ANRITSU LTD | revised |  | R4-2017045 |
| R4-2014024 | Correct UE beam assumption for Test Cases in A.5.6 | ANRITSU LTD | agreed |  |  |
| R4-2014025 | Modification of AG level in CORESET for RMC scheduling | ANRITSU LTD | noted |  |  |
| R4-2014026 | Aggregation level of CORESET for RMC scheduling | ANRITSU LTD | revised |  | R4-2017042 |
| R4-2014027 | Aggregation level of CORESET for RMC scheduling | ANRITSU LTD | agreed |  |  |
| R4-2014028 | Clarify FR1 NSA SS-SINR measurement TCs | ANRITSU LTD | agreed |  |  |
| R4-2014029 | Claify FR1 NSA SS-SINR measurement TCs | ANRITSU LTD | agreed |  |  |
| R4-2014030 | TP for 37.717-11-11 for DC\_8\_n2 | Huawei,HiSilicon | revised |  | R4-2016655 |
| R4-2014031 | TP for 37.717-21-11 for DC\_2-66\_n7 | Huawei,HiSilicon | approved |  |  |
| R4-2014032 | TP for 37.717-21-11 for DC\_2-5\_n7 | Huawei,HiSilicon | approved |  |  |
| R4-2014033 | TP for 37.717-21-11 for DC\_2-8\_n2 | Huawei,HiSilicon | approved |  |  |
| R4-2014034 | TP for 37.717-21-11 for DC\_5-66\_n7 | Huawei,HiSilicon | approved |  |  |
| R4-2014035 | TP for 37.717-21-11 for DC\_20-32\_n1 | Huawei,HiSilicon | revised |  | R4-2016656 |
| R4-2014036 | TP for 37.717-21-11 for DC\_20-32\_n3 | Huawei,HiSilicon | approved |  |  |
| R4-2014037 | TP for 37.717-31-11 for DC\_1-20-32\_n3 | Huawei,HiSilicon | approved |  |  |
| R4-2014038 | TP for 37.717-31-11 for DC\_2-4-7\_n28 | Huawei,HiSilicon | approved |  |  |
| R4-2014039 | TP for 37.717-31-11 for DC\_2-5-7\_n66 | Huawei,HiSilicon | approved |  |  |
| R4-2014040 | TP for 37.717-31-11 for DC\_2-5-66\_n7 | Huawei,HiSilicon | approved |  |  |
| R4-2014041 | TP for 37.717-31-11 for DC\_2-5-66\_n66 | Huawei,HiSilicon | approved |  |  |
| R4-2014042 | TP for 37.717-31-11 for DC\_2-7-66\_n28 | Huawei,HiSilicon | approved |  |  |
| R4-2014043 | TP for 37.717-31-11 for DC\_3-20-32\_n1 | Huawei,HiSilicon | approved |  |  |
| R4-2014044 | TP for 37.717-41-11 for DC\_2-5-7-66\_n66 | Huawei,HiSilicon | revised |  | R4-2016657 |
| R4-2014045 | Correction of B88 UL EARFCN | Huawei,HiSilicon | agreed |  |  |
| R4-2014046 | FR1 Inter-frequency Event triggered Reporting tests in DRX | ANRITSU LTD | agreed |  |  |
| R4-2014047 | FR1 Inter-frequency Event triggered Reporting tests in DRX | ANRITSU LTD | agreed |  |  |
| R4-2014048 | E-UTRAN | ANRITSU LTD | agreed |  |  |
| R4-2014049 | E-UTRAN | ANRITSU LTD | agreed |  |  |
| R4-2014050 | Correction to FR1 Aperiodic CSI Reporting | ANRITSU LTD | agreed |  |  |
| R4-2014051 | Correction to FR1 Aperiodic CSI Reporting | ANRITSU LTD | agreed |  |  |
| R4-2014052 | Correction to FR2 PMI Aperiodic CSI Reporting | ANRITSU LTD | agreed |  |  |
| R4-2014053 | Correction to FR2 PMI Aperiodic CSI Reporting | ANRITSU LTD | agreed |  |  |
| R4-2014054 | EESS protection related requirements for FR2 bands | Nokia, Nokia Shanghai Bell | revised |  | R4-2016785 |
| R4-2014055 | EESS protection related requirements for FR2 bands | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014056 | TP for TR 37.717-21-11: DC\_7-32\_n78 | VODAFONE Group Plc | approved |  |  |
| R4-2014057 | TP for TR 37.717-21-11: DC\_7-32\_n1 | VODAFONE Group Plc | approved |  |  |
| R4-2014058 | TP for TR 37.717-21-11: DC\_20-32\_n1 | VODAFONE Group Plc | noted |  |  |
| R4-2014059 | TP for TR 37.717-31-11: DC\_1-7-32\_n78 | VODAFONE Group Plc | approved |  |  |
| R4-2014060 | TP for TR 37.717-31-11: DC\_1-20-32\_n28 | VODAFONE Group Plc | approved |  |  |
| R4-2014061 | TP for TR 37.717-31-11: DC\_1-20-32\_n78 | VODAFONE Group Plc | approved |  |  |
| R4-2014062 | TP for TR 37.717-31-11: DC\_3-7-32\_n78 | VODAFONE Group Plc | approved |  |  |
| R4-2014063 | TP for TR 37.717-31-11: DC\_3-20-32\_n78 | VODAFONE Group Plc | approved |  |  |
| R4-2014064 | TP for TR 37.717-31-11: DC\_7-20-32\_n1 | VODAFONE Group Plc | approved |  |  |
| R4-2014065 | TP for TR 36.717-04-01: CA\_1-3-8-41 | VODAFONE Group Plc | revised |  | R4-2016767 |
| R4-2014066 | On the status of NTN in 3GPP | Fraunhofer HHI, Fraunhofer IIS | noted |  |  |
| R4-2014067 | TP for TR 36.717-03-01: CA\_1-8-41 | VODAFONE Group Plc | approved |  |  |
| R4-2014068 | TP for TR 36.717-03-01: CA\_1-40-41 | VODAFONE Group Plc | revised |  | R4-2016768 |
| R4-2014069 | TP for TR 36.717-03-01: CA\_8-40-41 | VODAFONE Group Plc | revised |  | R4-2016769 |
| R4-2014070 | TP to TR 37.717-11-11: DC\_18A\_n28A | KDDI Corporation | revised |  | R4-2016658 |
| R4-2014071 | TP for TR 37.717-11-21 DC\_1\_n3-n41 | Samsung, KDDI | approved |  |  |
| R4-2014072 | TP for TR 37.717-11-21 DC\_1\_n3-n77 | Samsung, KDDI | approved |  |  |
| R4-2014073 | TP for TR 37.717-11-21 DC\_1\_n41-n77 | Samsung, KDDI | approved |  |  |
| R4-2014074 | TP for TR 37.717-11-21 DC\_1-3\_n3-n41 | Samsung, KDDI | revised |  | R4-2016694 |
| R4-2014075 | TP for TR 37.717-11-21 DC\_1-3\_n3-n77 | Samsung, KDDI | revised |  | R4-2016695 |
| R4-2014076 | TP for TR 37.717-11-21 DC\_1-3\_n3-n78 | Samsung, KDDI | revised |  | R4-2016696 |
| R4-2014077 | TP for TR 37.717-11-21 DC\_1-3\_n41-n77 | Samsung, KDDI | approved |  |  |
| R4-2014078 | TP for TR 37.717-11-21 DC\_1-3-18\_n3-n77 | Samsung, KDDI | revised |  | R4-2016697 |
| R4-2014079 | TP for TR 37.717-11-21 DC\_1-3-18\_n3-n78 | Samsung, KDDI | approved |  |  |
| R4-2014080 | TP for TR 37.717-11-21 DC\_1-3-41\_n3-n41 | Samsung, KDDI | revised |  | R4-2016698 |
| R4-2014081 | TP for TR 37.717-11-21 DC\_1-3-41\_n3-n77 | Samsung, KDDI | revised |  | R4-2016699 |
| R4-2014082 | TP for TR 37.717-11-21 DC\_1-3-41\_n3-n78 | Samsung, KDDI | revised |  | R4-2016700 |
| R4-2014083 | TP for TR 37.717-11-21 DC\_1-3-41\_n41-n77 | Samsung, KDDI | approved |  | - |
| R4-2014084 | TP for TR 37.717-11-21 DC\_1-3-41\_n41-n78 | Samsung, KDDI | approved |  | - |
| R4-2014085 | TP for TR 37.717-11-21 DC\_1-18\_n3-n77 | Samsung, KDDI | approved |  |  |
| R4-2014086 | TP for TR 37.717-11-21 DC\_1-41\_n3-n41 | Samsung, KDDI | approved |  | - |
| R4-2014087 | TP for TR 37.717-11-21 DC\_1-41\_n3-n77 | Samsung, KDDI | approved |  |  |
| R4-2014088 | TP for TR 37.717-11-21 DC\_1-41\_n3-n78 | Samsung, KDDI | approved |  |  |
| R4-2014089 | TP for TR 37.717-11-21 DC\_1-41\_n41-n77 | Samsung, KDDI | approved |  | - |
| R4-2014090 | TP for TR 37.717-11-21 DC\_1-41\_n41-n78 | Samsung, KDDI | approved |  | - |
| R4-2014091 | TP for TR 37.717-11-21 DC\_3\_n3-n41 | Samsung, KDDI | revised |  | R4-2016706 |
| R4-2014092 | TP for TR 37.717-11-21 DC\_3\_n41-n77 | Samsung, KDDI | approved |  |  |
| R4-2014093 | TP for TR 37.717-11-21 DC\_3-18\_n3-n77 | Samsung, KDDI | revised |  | R4-2016707 |
| R4-2014094 | TP for TR 37.717-11-21 DC\_3-18\_n3-n78 | Samsung, KDDI | approved |  |  |
| R4-2014095 | TP for TR 37.717-11-21 DC\_3-41\_n3-n41 | Samsung, KDDI | revised |  | R4-2016708 |
| R4-2014096 | TP for TR 37.717-11-21 DC\_3-41\_n3-n77 | Samsung, KDDI | revised |  | R4-2016709 |
| R4-2014097 | TP for TR 37.717-11-21 DC\_3-41\_n3-n78 | Samsung, KDDI | revised |  | R4-2016710 |
| R4-2014098 | TP for TR 37.717-11-21 DC\_3-41\_n41-n77 | Samsung, KDDI | approved |  | - |
| R4-2014099 | TP for TR 37.717-11-21 DC\_3-41\_n41-n78 | Samsung, KDDI | approved |  | - |
| R4-2014100 | TP for TR 37.717-11-21 DC\_41\_n3-n41 | Samsung, KDDI | approved |  | - |
| R4-2014101 | TP for TR 37.717-11-21 DC\_41\_n41-n77 | Samsung, KDDI | revised |  | R4-2016714 |
| R4-2014102 | TP for TR 37.717-11-21 DC\_41\_n41-n78 | Samsung, KDDI | revised |  | R4-2016715 |
| R4-2014103 | TP for TR 37.717-21-11 DC\_1-3\_n3 | Samsung, KDDI | approved |  |  |
| R4-2014104 | TP for TR 37.717-21-11 DC\_1-41\_n3 | Samsung, KDDI | approved |  |  |
| R4-2014105 | TP for TR 37.717-21-11 DC\_3-18\_n3 | Samsung, KDDI | approved |  |  |
| R4-2014106 | TP for TR 37.717-21-11 DC\_3-41\_n3 | Samsung, KDDI | approved |  |  |
| R4-2014107 | TP for TR 37.717-31-11 DC\_1-3-18\_n3 | Samsung, KDDI | approved |  |  |
| R4-2014108 | TP for TR 37.717-31-11 DC\_1-3-41\_n3 | Samsung, KDDI | approved |  |  |
| R4-2014109 | TP for TR 37.717-31-11 DC\_1-3-41\_n41 | Samsung, KDDI | approved |  |  |
| R4-2014110 | TP for TR 38.717-02-01 CA\_n41-n77 | Samsung, KDDI | noted |  |  |
| R4-2014111 | TP for TR 38.717-02-01 CA\_n41-n78 | Samsung, KDDI | revised |  | R4-2016680 |
| R4-2014112 | TP for TR 38.717-03-01 CA\_n3-n41-n77 | Samsung, KDDI | revised |  | R4-2016752 |
| R4-2014113 | TP for TR 38.717-03-01 CA\_n3-n41-n78 | Samsung, KDDI | revised |  | R4-2016753 |
| R4-2014114 | TP for TR 38.717-03-01 CA\_n28-n41-n77 | Samsung, KDDI | approved |  |  |
| R4-2014115 | TP for TR 38.717-03-01 CA\_n28-n41-n78 | Samsung, KDDI | approved |  |  |
| R4-2014116 | TP for TR 38.717-03-02 CA\_n3-n28-n41 | Samsung, KDDI | revised |  | R4-2016755 |
| R4-2014117 | TP for TR 38.717-03-02 CA\_n3-n28-n78 | Samsung, KDDI | revised |  | R4-2016756 |
| R4-2014118 | TP for TR 38.717-04-01 CA\_n3-n28-n41-n77 | Samsung, KDDI | approved |  |  |
| R4-2014119 | TP for TR 38.717-04-02 CA\_n3-n28-n41-n77 | Samsung, KDDI | approved |  |  |
| R4-2014120 | TP for TR 38.717-04-02 CA\_n3-n28-n41-n78 | Samsung, KDDI | approved |  |  |
| R4-2014121 | TP for TR 37.717-11-21 DC\_2\_n7-n66 | Samsung, TELUS, Bell mobility | approved |  |  |
| R4-2014122 | TP for TR 37.717-11-21 DC\_2\_n38-n66 | Samsung, TELUS, Bell mobility | approved |  |  |
| R4-2014123 | TP for TR 37.717-11-21 DC\_2\_n66-n78 | Samsung, TELUS, Bell mobility | approved |  |  |
| R4-2014124 | TP for TR 37.717-11-21 DC\_2-7\_n38-n66 | Samsung, TELUS, Bell mobility | approved |  |  |
| R4-2014125 | TP for TR 37.717-11-21 DC\_7-66\_n38-n78 | Samsung, TELUS, Bell mobility | approved |  |  |
| R4-2014126 | TP for TR 37.717-11-21 DC\_12\_n7-n66 | Samsung, TELUS, Bell mobility | approved |  |  |
| R4-2014127 | TP for TR 37.717-11-21 DC\_66\_n38-n66 | Samsung, TELUS, Bell mobility | revised |  | R4-2016716 |
| R4-2014128 | TP for TR 37.717-21-11 DC\_5A-7A\_n66A | Samsung, TELUS, Bell mobility | approved |  |  |
| R4-2014129 | TP for TR 37.717-21-11 DC\_7-66\_n77 | Samsung, TELUS, Bell mobility | approved |  |  |
| R4-2014130 | TP for TR 37.717-31-11 DC\_2-5-7\_n66 | Samsung, TELUS, Bell mobility | approved |  |  |
| R4-2014131 | TP for TR 38.717-02-01 CA\_n2-n66 | Samsung, TELUS, Bell mobility | approved |  |  |
| R4-2014132 | TP for TR 37.717-21-11 DC\_2-5\_n48 | Samsung, Verizon | approved |  |  |
| R4-2014133 | TP for TR 37.717-21-11 DC\_2-13\_n48 | Samsung, Verizon | approved |  |  |
| R4-2014134 | TP for TR 37.717-21-11 DC\_2-46\_n261 | Samsung, Verizon | approved |  |  |
| R4-2014135 | TP for TR 37.717-21-11 DC\_2-48\_n5 | Samsung, Verizon | approved |  |  |
| R4-2014136 | TP for TR 37.717-21-11 DC\_5-46\_n66 | Samsung, Verizon | approved |  |  |
| R4-2014137 | TP for TR 37.717-21-11 DC\_5-66\_n48 | Samsung, Verizon | approved |  |  |
| R4-2014138 | TP for TR 37.717-21-11 DC\_5-66\_n77 | Samsung, Verizon | approved |  |  |
| R4-2014139 | TP for TR 37.717-21-11 DC\_13-48\_n77 | Samsung, Verizon | noted |  |  |
| R4-2014140 | TP for TR 37.717-21-11 DC\_13-46\_n261 | Samsung, Verizon | revised |  | R4-2016660 |
| R4-2014141 | Draft CR for 38.101-1 to introduce new inter-band CA for 2bands DL with x bands UL(x=1, 2) within FR1 | Samsung, TELUS, Bell mobility | endorsed |  |  |
| R4-2014142 | Draft CR for 38.101-3 to introduce new inter-band EN-DC (1NR band +1LTE band) within FR1 | Samsung, SK Telecom, KT, KDDI, TELUS, Bell mobility | endorsed |  |  |
| R4-2014143 | Draft CR for 38.101-3 to introduce new inter-band EN-DC (2LTE band+1NR band) including FR2 | Samsung, Verizon | endorsed |  |  |
| R4-2014144 | Draft CR for 38.101-3 to introduce new inter-band EN-DC (2LTE band+1NR band) within FR1 | Samsung, SK Telecom, KT, KDDI, Verizon | endorsed |  |  |
| R4-2014145 | Draft CR for 38.101-3 to introduce new inter-band EN-DC (3LTE band+1NR band) within FR1 | Samsung, SK Telecom, KT, KDDI | endorsed |  |  |
| R4-2014146 | Draft CR for 38.101-3 to introduce new inter-band EN-DC (4LTE band+1NR band) within FR1 | Samsung, SK Telecom | endorsed |  |  |
| R4-2014147 | LS on updated Rel-16 RAN1 UE features lists for NR | RAN1 | noted |  |  |
| R4-2014148 | LS on updated Rel-16 RAN1 UE features list for LTE | RAN1 | noted |  |  |
| R4-2014149 | LS on updated Rel-16 RAN1 UE features lists for NR | RAN1 | noted |  |  |
| R4-2014150 | LS on updated Rel-16 RAN1 UE features lists for LTE | RAN1 | noted |  |  |
| R4-2014151 | Reply LS on UE capability | RAN1 | noted |  |  |
| R4-2014152 | LS on evaluation methodology for connected mode UE power saving enhancements | RAN1 | noted |  |  |
| R4-2014153 | Reply LS on UE declaring beam failure due to LBT failures during active TCI switching | RAN1 | noted |  |  |
| R4-2014154 | LS on evaluation methodology for UE power saving enhancements | RAN1 | noted |  |  |
| R4-2014155 | Reply LS on Rel-16 UE feature lists for NR DAPS | RAN2 | noted |  |  |
| R4-2014156 | Reply LS on exchange of information related to SRS-RSRP measurement resource configuration for UE-CLI | RAN2 | noted |  |  |
| R4-2014157 | LS to RAN4 on measurement requirement for eMTC UE in RRC\_INACTIVE | RAN2 | noted |  |  |
| R4-2014158 | LS on UE capability for V2X | RAN2 | noted |  |  |
| R4-2014159 | LS on simultaneous Rx/Tx for inter-band NR-DC | RAN2 | noted |  |  |
| R4-2014160 | LS on cell-grouping UE capability for synchronous NR-DC | RAN2 | noted |  |  |
| R4-2014161 | Band 24 UE additional emissions requirements, A-MPR scenarios and assumptions, and UE REFSENS | Ligado Networks | noted |  |  |
| R4-2014162 | LTE CA\_NS\_04 PC2 256QAM AMPR | Qualcomm Inc. | withdrawn |  |  |
| R4-2014163 | LTE CA\_NS\_04 PC2 256QAM AMPR | Qualcomm Inc. | withdrawn |  |  |
| R4-2014164 | CR CatF LTE CA\_NS\_04 PC2 256QAM AMPR | Qualcomm | not pursued |  |  |
| R4-2014165 | CR CatF Cross Band Noise DC\_1\_n40\_highBW | Qualcomm | not pursued |  |  |
| R4-2014166 | CR CatA Cross Band Noise DC\_1\_n40\_hignBW | Qualcomm | withdrawn |  |  |
| R4-2014167 | CR CatF n7 NS\_46 AMPR and coexistence | Qualcomm Incorporated | revised |  | R4-2017804 |
| R4-2014168 | CR CatF CA\_n39-n41\_and CA\_n40-n41 Sync | Qualcomm Incorporated | withdrawn |  |  |
| R4-2014169 | CR CatF Cross Band Noise DC\_3\_n1\_highBW | Qualcomm Incorporated | not pursued |  |  |
| R4-2014170 | ENDC Cross Band Noise with high NR BW | Qualcomm Incorporated | noted |  |  |
| R4-2014171 | CA\_n7B AMPR REFSENS | Qualcomm Incorporated | noted |  |  |
| R4-2014172 | DC\_XXA\_71A\_n71A REFSENS relaxation | Qualcomm Incorporated | revised |  | R4-2016661 |
| R4-2014173 | 35M\_45M AMPR, MPR, REFSENS | Qualcomm Incorporated | revised |  | R4-2016600 |
| R4-2014174 | B48/n48 Allocation shift emission containment | Qualcomm Incorporated | noted |  |  |
| R4-2014175 | HPUE TDD+TDD considerations | Qualcomm Incorporated | withdrawn |  |  |
| R4-2014176 | Draft CR for 37.105 Introduction of NR band n24 | Ligado Networks | endorsed |  |  |
| R4-2014177 | Draft CR for 37.145-1 Introduction of NR band n24 | Ligado Networks | revised |  | R4-2016892 |
| R4-2014178 | Draft CR for 37.145-2 Introduction of NR band n24 | Ligado Networks | endorsed |  |  |
| R4-2014179 | Draft CR for 38.141-1 Introduction of NR band n24 | Ligado Networks | revised |  | R4-2016893 |
| R4-2014180 | Draft CR for 38.141-2 Introduction of NR band n24 | Ligado Networks | revised |  | R4-2016894 |
| R4-2014181 | [CR] NR Perf Maintenance R15 Cat F | ZTE Corporation | withdrawn |  |  |
| R4-2014182 | [CR] NR Perf Maintenance R16 Cat A | ZTE Corporation | withdrawn |  |  |
| R4-2014183 | [CR] NR Perf Maintenance R16 Cat F | ZTE Corporation | withdrawn |  |  |
| R4-2014184 | [draft CR] Test cases for timing for IAB-MT | ZTE Corporation | revised |  | R4-2017116 |
| R4-2014185 | Discussion and TP for NR-U UE ACS | MediaTek Inc. | noted |  |  |
| R4-2014186 | REFSENS of n8 and n71 for new channel bandwidth | MediaTek Inc. | noted |  |  |
| R4-2014187 | Discussion of MSD for 3DL2UL DC\_42\_n1-n79 and DC\_19\_n1-n77 due to UL IMD issues | MediaTek Inc. | noted |  |  |
| R4-2014188 | CR on scheduling restriction for CSI-RS based intra-frequency measurement | Qualcomm CDMA Technologies | revised | R4-2011822 | R4-2017316 |
| R4-2014189 | Draft test case CR on EN-DC event triggered reporting tests without gap for NR neighbor cell in FR2 | Qualcomm CDMA Technologies | revised |  | R4-2017231 |
| R4-2014190 | On TCI state switching failure in NR-U | ZTE Corporation | noted |  |  |
| R4-2014191 | Draft CR for 37.105: Corrections related to Band 24 regulatory updates (Rel-15) | Ligado Networks | revised |  | R4-2016885 |
| R4-2014192 | Draft CR for TS 37.105 Corrections related to Band 24 regulatory updates (Rel-16) | Ligado Networks | withdrawn |  |  |
| R4-2014193 | Draft CR for TS 37.105 Corrections related to Band 24 regulatory updates (Rel-17) | Ligado Networks | withdrawn |  |  |
| R4-2014194 | Draft CR for 37.145-1: Corrections related to Band 24 regulatory updates (Rel-13) | Ligado Networks | revised |  | R4-2016886 |
| R4-2014195 | Draft CR for TS 37.145-1 Corrections related to Band 24 regulatory updates (Rel-14) | Ligado Networks | withdrawn |  |  |
| R4-2014196 | Draft CR for TS 37.145-1 Corrections related to Band 24 regulatory updates (Rel-15) | Ligado Networks | withdrawn |  |  |
| R4-2014197 | Draft CR for TS 37.145-1 Corrections related to Band 24 regulatory updates (Rel-16) | Ligado Networks | withdrawn |  |  |
| R4-2014198 | Draft CR for TS 37.145-1 Corrections related to Band 24 regulatory updates (Rel-17) | Ligado Networks | withdrawn |  |  |
| R4-2014199 | Draft CR for 37.145-2: Corrections related to Band 24 regulatory updates (Rel-15) | Ligado Networks | revised |  | R4-2016887 |
| R4-2014200 | Draft CR for TS 37.145-2 Corrections related to Band 24 regulatory updates (Rel-16) | Ligado Networks | withdrawn |  |  |
| R4-2014201 | Draft CR for TS 37.145-2 Corrections related to Band 24 regulatory updates (Rel-17) | Ligado Networks | withdrawn |  |  |
| R4-2014202 | Draft CR for TS 38.104 Introduction of SUL for UL of NR band n24 | Ligado Networks | endorsed |  |  |
| R4-2014203 | Draft CR for TS 36.104 Introduction of SUL for UL of NR band n24 | Ligado Networks | endorsed |  |  |
| R4-2014204 | Draft CR for TS 36.141 Introduction of SUL for UL of NR band n24 | Ligado Networks | endorsed |  |  |
| R4-2014205 | Draft CR for TS 37.104 Introduction of SUL for UL of NR band n24 | Ligado Networks | endorsed |  |  |
| R4-2014206 | Draft CR for TS 37.105 Introduction of SUL for UL of NR band n24 | Ligado Networks | revised |  | R4-2016898 |
| R4-2014207 | Draft CR for TS 37.141 Introduction of SUL for UL of NR band n24 | Ligado Networks | revised |  | R4-2016899 |
| R4-2014208 | Draft CR for TS 37.145-1 Introduction of SUL for UL of NR band n24 | Ligado Networks | revised |  | R4-2016900 |
| R4-2014209 | Draft CR for TS 37.145-2 Introduction of SUL for UL of NR band n24 | Ligado Networks | endorsed |  |  |
| R4-2014210 | Draft CR for TS 38.141-1 Introduction of SUL for UL of NR band n24 | Ligado Networks | endorsed |  |  |
| R4-2014211 | Draft CR for TS 38.141-2 Introduction of SUL for UL of NR band n24 | Ligado Networks | endorsed |  |  |
| R4-2014212 | On L1 SL-RSRP accuracy for NR V2X | ZTE Corporation | noted |  |  |
| R4-2014213 | On interruption requirement on LTE SL due to changing of NR SL sync source | ZTE Corporation | noted |  |  |
| R4-2014214 | Selection or Reselection of V2X Synchronization Reference Source | ZTE Corporation | noted |  |  |
| R4-2014215 | Discussion on PDCCH-WUS/PDCCG test | Apple | noted |  |  |
| R4-2014216 | Discussion on DPS transmission scheme in HST | Apple | noted |  |  |
| R4-2014217 | Discussion on applicability rule for HST test | Apple | noted |  |  |
| R4-2014218 | Discusison on UL gaps for self-calibration/monitoring | Apple | noted |  |  |
| R4-2014219 | Discussion on feasibility and performance impact of RLM/BFD relaxation | Apple | noted |  |  |
| R4-2014220 | On HST intra-frequency measurement requirements | Apple | noted |  |  |
| R4-2014221 | CR for HST intra-frequency measurement requirements | Apple | merged |  |  |
| R4-2014222 | Discussion on DAPS HO test applicability | Apple | noted |  |  |
| R4-2014223 | CR for DAPS HO test applicability | Apple | agreed |  |  |
| R4-2014224 | Work plan for measurement gap enhancement | Apple | noted |  |  |
| R4-2014225 | Work plan for NR high speed train scenario in FR1 | Apple | noted |  |  |
| R4-2014226 | Test case for inter-frequency measurement without gap: SA event triggered reporting tests for FR1 when DRX is used (A.6.6.2.X) | Apple | revised |  | R4-2017213 |
| R4-2014227 | E-UTRAN – NR FR2 interruptions at NR SRS carrier based switching (A.5.5.2.X) | Apple | revised |  | R4-2017183 |
| R4-2014228 | Testing applicability for new mandatory gap patterns | Apple | noted |  |  |
| R4-2014229 | On cell-grouping UE capability for synchronous NR-DC | Apple | noted |  |  |
| R4-2014230 | Reply LS on cell-grouping UE capability for synchronous NR-DC | Apple | revised |  | R4-2016812 |
| R4-2014231 | Maintenance CR on SA inter-frequency event triggered reporting tests for FR1 | Apple | agreed |  |  |
| R4-2014232 | On the feasibility of CBM for FR2 inter-band CA cross different frequency groups | Apple | noted |  |  |
| R4-2014233 | On the feasibility of IBM for FR2 inter-band CA within the same frequency group | Apple | noted |  |  |
| R4-2014234 | On R16 UE feature list | Apple | noted |  |  |
| R4-2014235 | CR on CSSF with both CSI-RS and SSB | Apple | revised |  | R4-2017317 |
| R4-2014236 | On remaining core issues of CSI-RS for L3 measurements | Apple | noted |  |  |
| R4-2014237 | Discussion on RRC based BWP switch for Scell | Apple | noted |  |  |
| R4-2014238 | CR on Applicability of RRC based BWP switch requirements - Rel15 | Apple | merged |  |  |
| R4-2014239 | CR on Applicability of RRC based BWP switch requirements - Rel16 | Apple | withdrawn |  |  |
| R4-2014240 | Discussion on demodulation requirements for NR-U | Apple | noted |  |  |
| R4-2014241 | UE demodulation requirements for Ultra low BLER | Apple | noted |  |  |
| R4-2014242 | UE demodulation requirements with higher BLER | Apple | noted |  |  |
| R4-2014243 | CR on requirements with slot aggreagation in FR2 | Apple | revised |  | R4-2017514 |
| R4-2014244 | Discussion on RRM requirements for Multi-TRP | Apple | noted |  |  |
| R4-2014245 | CR to 38.133 on RRM requirements for multi-TRxP | Apple | postponed |  |  |
| R4-2014246 | CR to 38.133 on Link recovery requirements | Apple | postponed |  |  |
| R4-2014247 | Simulation results for L1-SINR Measurement accuracy | Apple | noted |  |  |
| R4-2014248 | Draft CR for eMIMO demod requirements - General and Applicability rule | Apple | revised |  | R4-2017601 |
| R4-2014249 | On PMI reporting requirements with eType II codebook | Apple | noted |  |  |
| R4-2014250 | Requirements for UL spatial relation info switch | Apple | noted |  |  |
| R4-2014251 | Discussion on testcases for BWP switching on multiple CCs | Apple | noted |  |  |
| R4-2014252 | On PMI reporting requirements with larger number of TX ports | Apple | noted |  |  |
| R4-2014253 | On Release Independence for NR UE performance enhancement requirements | Apple | noted |  |  |
| R4-2014254 | CR to 38.101-1: UL MIMO EVM and emission requirements update | Qualcomm Incorporated | revised |  | R4-2016780 |
| R4-2014255 | CR to 38.101-1: UL MIMO EVM and emission requirements update | Qualcomm Incorporated | withdrawn |  |  |
| R4-2014256 | FR1 transmitter requirements for 2-layer UL | Qualcomm Incorporated | noted |  |  |
| R4-2014257 | draft LS to RAN5 on new emissions requirements | Qualcomm Incorporated | noted |  |  |
| R4-2014258 | On introduction of new emissions requirements to existing bands | Qualcomm Incorporated | noted |  |  |
| R4-2014259 | CR to 38.101-2: Introduction of NS\_203 | Qualcomm Incorporated | not pursued |  |  |
| R4-2014260 | CR to 38.101-2: Introduction of NS\_203 | Qualcomm Incorporated | withdrawn |  |  |
| R4-2014261 | CR to 38.101-2: ULCA clarifications | Qualcomm Incorporated | agreed |  |  |
| R4-2014262 | CR to 38.101-2: ULCA clarifications | Qualcomm Incorporated | agreed |  |  |
| R4-2014263 | Discussion on PC3 EIRP and EIS in n262 | Qualcomm Incorporated | noted |  |  |
| R4-2014264 | On Japan FWA EIRP requirement | Qualcomm Incorporated | noted |  |  |
| R4-2014265 | On impact of non-co-located test antennae for FR2 inter-band testing | Qualcomm Incorporated | noted |  |  |
| R4-2014266 | FR2 testability enhancement for polarization mismatch | Qualcomm Incorporated | noted |  |  |
| R4-2014267 | Impact on beam management due to spherical wavefront in DL | Qualcomm Incorporated | noted |  |  |
| R4-2014268 | CR on CSI-RS BW condition for BFD/CBD R15 | Apple | revised |  | R4-2017037 |
| R4-2014269 | CR on CSI-RS BW condition for BFD/CBD R16 | Apple | agreed |  |  |
| R4-2014270 | On AP-CSI-RS based L1-RSRP measurement | Apple, Huawei, HiSilicon | noted |  |  |
| R4-2014271 | CR on AP-CSI-RS based L1-RSRP measurement R15 | Apple, Huawei, HiSilicon | revised |  | R4-2017038 |
| R4-2014272 | CR on AP-CSI-RS based L1-RSRP measurement R16 | Apple, Huawei, HiSilicon | agreed |  |  |
| R4-2014273 | On CSSF for R15 EN-DC | Apple | noted |  |  |
| R4-2014274 | CR on CSSF for R15 EN-DC | Apple | merged |  |  |
| R4-2014275 | Draft CR on maintenance for inter-band FR2 CA RRM | Apple | revised |  | R4-2017204 |
| R4-2014276 | Test case of SCell activation and deactivation of multiple unknown SCells in FR1 with single activation/deactivation command | Apple | revised |  | R4-2017210 |
| R4-2014277 | Draft CR on UE behavior for UE specific CBW change | Apple | revised |  | R4-2017209 |
| R4-2014278 | Test case list for UE specific CBW change | Apple | noted |  |  |
| R4-2014279 | Test case of UE specific CBW change on FR1 NR PSCell with non-DRX in synchronous EN-DC | Apple | revised |  | R4-2017217 |
| R4-2014280 | Discussion on R16 IDLE/INACTIVE RRM requirement with SMTC2-LP | Apple | noted |  |  |
| R4-2014281 | CR on R16 IDLE/INACTIVE RRM requirement with SMTC2-LP | Apple | postponed |  |  |
| R4-2014282 | LS on new per-UE MG for NR positioning | RAN4 | approved |  |  |
| R4-2014283 | On measurement capability of NR-U | Apple | noted |  |  |
| R4-2014284 | On SCell activation requirement for NR-U | Apple | noted |  |  |
| R4-2014285 | Draft CR on SCell activation requirement for NR-U | Apple | withdrawn |  |  |
| R4-2014286 | Work plan for R17 FeRRM | Apple | revised |  | R4-2017265 |
| R4-2014287 | Draft test case CR on EN-DC CSI-RSRP measurement accuracy for NR neighbor cell in FR2 | Qualcomm CDMA Technologies | revised |  | R4-2017232 |
| R4-2014288 | CR on introducing CSI-RS configurations for RRM | Qualcomm CDMA Technologies | revised |  | R4-2017337 |
| R4-2014289 | Addition of Time Domain Alternative for Spatial Correlation Validation | Spirent Communications | revised |  | R4-2017581 |
| R4-2014290 | Inter-band + intra-band CA FR2 frequency separation class | Qualcomm Incorporated | noted |  |  |
| R4-2014291 | Draft test case CR on measurement procedure of L1-SINR for CSI-RS-based CMR and no dedicated IMR | Qualcomm CDMA Technologies | revised |  | R4-2017167 |
| R4-2014292 | Draft test case CR on measurement performance of L1-SINR for CSI-RS-based CMR and no dedicated IMR | Qualcomm CDMA Technologies | postponed |  |  |
| R4-2014293 | Inter-band DL CA CBM band pairs for FR2 Rel-17 | Qualcomm Incorporated | noted |  |  |
| R4-2014294 | Discussion of maintenace issues for NR V2X | LG Electronics Inc. | noted |  |  |
| R4-2014295 | CR of NR V2X operating band group | LG Electronics Inc. | revised |  | R4-2017101 |
| R4-2014296 | CR of NR V2X measurement accuracy requirements(SL-RSSI and L1 SL-RSRP) | LG Electronics Inc. | revised |  | R4-2017102 |
| R4-2014297 | Requirements for L1-SINR measurement accuracy | Qualcomm CDMA Technologies | noted |  |  |
| R4-2014298 | CR of Annex.B for NR V2X side conditions | LG Electronics Inc. | revised |  | R4-2017103 |
| R4-2014299 | draft CR of Test for initiation and cease of SLSS Transmission with V2X Sidelink Communication | LG Electronics Inc. | revised |  | R4-2017107 |
| R4-2014300 | TR 36.717-03-02 v0.2.0 TR Update for LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL in Rel-17 | LG Electronics Polska | withdrawn |  |  |
| R4-2014301 | Revised WID on LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL in Rel-17 | LG Electronics Polska | endorsed |  |  |
| R4-2014302 | Introduction of LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL to TS36.101 | LG Electronics Polska | withdrawn |  |  |
| R4-2014303 | Remaining issues on Tx diversity | LG Electronics Polska | noted |  |  |
| R4-2014304 | TR 37.717-11-21 v0.2.0 TR update: LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17 | LG Electronics Polska | agreed |  |  |
| R4-2014305 | Revised WID on LTE (xDL/UL x=1.2,3,4) with NR 2 bands (2DL/1UL) EN DC in Rel-17 | LG Electronics Polska | endorsed |  |  |
| R4-2014306 | Introducing CR on new EN-DC LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17 | LG Electronics Polska | agreed |  |  |
| R4-2014307 | Clarification of additional spurious emission requirements on two bands uplink Inter-band CA(R15) | SoftBank Corp. | not pursued |  |  |
| R4-2014308 | Clarification of additional spurious emission requirements on two bands uplink Inter-band CA(R16) | SoftBank Corp. | withdrawn |  |  |
| R4-2014309 | Clarification of additional spurious emission requirements on Inter-band EN-DC(R15) | SoftBank Corp. | not pursued |  |  |
| R4-2014310 | Clarification of additional spurious emission requirements on Inter-band EN-DC(R16) | SoftBank Corp. | withdrawn |  |  |
| R4-2014311 | Clarifications and corrections on UE co-ex requirements(R15) | SoftBank Corp. | revised |  | R4-2017830 |
| R4-2014312 | Clarifications and corrections on UE co-ex requirements(R16) | SoftBank Corp. | revised |  | R4-2017831 |
| R4-2014313 | Support of Japan regulation for 2.5 GHz(BWA) in NR BS | SoftBank Corp., KDDI Corporation, NEC Corporation | noted |  |  |
| R4-2014314 | Discussions on the remaining issues for CSI-RS L3 core requirements | Qualcomm CDMA Technologies | noted |  |  |
| R4-2014315 | TP on summary of self-interference analysis for new EN-DC LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17 | LG Electronics France | approved |  |  |
| R4-2014316 | MSD anlaysis results for new DC band combinations | LG Electronics France | approved |  |  |
| R4-2014317 | Consideration on additional ILs and MSD levels for DC\_20\_n38 UE or V2X\_20\_n38 UE based on RF architecture | LG Electronics France | noted |  |  |
| R4-2014318 | Correction on Additional ILs and MSD levels for DC\_20\_n38 UE | LG Electronics France, Huawei | revised |  | R4-2017818 |
| R4-2014319 | Discussion on MFBI for NR system | LG Electronics France | withdrawn |  |  |
| R4-2014320 | Enhanced beam correspondence test applicability rules in rel-16 | LG Electronics France | noted |  |  |
| R4-2014321 | UE-to-UE coexistence and other remaining issues for V2X operation | LG Electronics France | noted |  |  |
| R4-2014322 | MSD Analysis results and harmonic reduction filter for V2X\_20A\_n38A | LG Electronics France | noted |  |  |
| R4-2014323 | Correction on 5G V2X UE RF requirements in TS38.101-1 in rel-16 | LG Electronics France | revised |  | R4-2016803 |
| R4-2014324 | Correction on 5G V2X inter-band con-current UE RF requirements in TS38.101-3 | LG Electronics France | revised |  | R4-2016810 |
| R4-2014325 | Correction on update 5G V2X UE RF requirements in TR38.886 | LG Electronics France | revised |  | R4-2016804 |
| R4-2014326 | Work plan for SL enhancement for RF perspectives in Rel-17 | LG Electronics France | revised |  | R4-2016924 |
| R4-2014327 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | revised | - | R4-2016942 |
| R4-2014328 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | revised | - | R4-2016943 |
| R4-2014329 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | revised | - | R4-2016944 |
| R4-2014330 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.101-1 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014331 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.104 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014332 | Introduction of 1880-1920MHz SUL band into Rel-16 TS 36.104 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014333 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 36.141 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014334 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.104 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014335 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.105 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014336 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.141 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014337 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-1 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014338 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-2 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014339 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-1 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014340 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-2 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014341 | introduction of 2300-2400MHz SUL band into Rel-17 TS 38.101-1 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014342 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.104 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014343 | Introduction of 2300-2400MHz SUL band into Rel-16 TS 36.104 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014344 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 36.141 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014345 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.104 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014346 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.105 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014347 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.141 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014348 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-1 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014349 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-2 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014350 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-1 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014351 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-2 | CMCCCMCC, Huawei, HiSilicon | withdrawn |  |  |
| R4-2014352 | Motivation for new WI on air-to-ground network for NR | CMCC | not treated |  |  |
| R4-2014353 | New WID on air-to-ground network for NR | CMCC | not treated |  |  |
| R4-2014354 | Simulation results on CSI-RS based L3 measurements for RSRP | Qualcomm CDMA Technologies | noted |  |  |
| R4-2014355 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-2 | CMCC, Huawei, HiSilicon | agreed |  |  |
| R4-2014356 | Principles for 2-step RACH test cases | ZTE Corporation | noted |  |  |
| R4-2014357 | Discussion on dual active protocol stack handover | MediaTek inc. | noted |  |  |
| R4-2014358 | CR on TS38.133 for dual active protocol stack handover | MediaTek inc. | revised |  | R4-2017094 |
| R4-2014359 | Discussion on interruption time for unaligned CA scenarios | MediaTek inc. | noted |  |  |
| R4-2014360 | CR on TS38.133 interruption time for CA with non-aligned frame boundaries | MediaTek inc. | revised |  | R4-2017128 |
| R4-2014361 | Discussion on LTE CRS based and NR SSB based measurement in NR IDLE/INACTIVE mode | MediaTek inc. | noted |  |  |
| R4-2014362 | CR on TS38.133 for measurement capability of IDLE mode DCCA measurement | MediaTek inc., Huawei, HiSilicon | merged |  |  |
| R4-2014363 | Discussion on direct Scell activation | MediaTek inc. | noted |  |  |
| R4-2014364 | CR on TS38.133 for inter-frequency measurement requirement without gap | MediaTek inc. | agreed |  |  |
| R4-2014365 | CR on TS38.133 SA event triggered reporting tests for FR2 without gap when DRX is used (A.7.6.2.X) | MediaTek inc. | revised |  | R4-2017214 |
| R4-2014366 | Work plan of Rel-17 Power Saving Enhancements | MediaTek inc. | revised |  | R4-2017270 |
| R4-2014367 | Evaluation on Rel-17 RLM/BFD measurement relaxation | MediaTek inc. | noted |  |  |
| R4-2014368 | Discussion on performance part for SCell dormancy | MediaTek inc. | noted |  |  |
| R4-2014369 | CR on TS38.133 for NR FR1 | MediaTek inc. | postponed |  |  |
| R4-2014370 | Discussion on performance part for cell reselection | MediaTek inc. | noted |  |  |
| R4-2014371 | CR on TS38.133 for cell reselection to FR1 inter-RAT E-UTRA test case with low mobility criterion | MediaTek inc. | revised |  | R4-2017136 |
| R4-2014372 | CR on TS38.133 for cell activation and deactivation test case | MediaTek inc. | agreed |  |  |
| R4-2014373 | CR on TS38.133 for cell activation and deactivation test case | MediaTek inc. | agreed |  |  |
| R4-2014374 | CR on TS38.133 for cell reselection test case | MediaTek inc. | revised |  | R4-2017046 |
| R4-2014375 | CR on TS38.133 for cell reselection test case | MediaTek inc. | agreed |  |  |
| R4-2014376 | Correction of active BWP switch test case | MediaTek inc. | revised |  | R4-2017047 |
| R4-2014377 | CR on TS38.133 for active BWP switch test cases | MediaTek inc. | agreed |  |  |
| R4-2014378 | CR on TS38.133 for E-UTRAN | MediaTek inc. | agreed |  |  |
| R4-2014379 | CR on TS38.133 for SCell activation and deactivation delay test cases | MediaTek inc. | agreed |  |  |
| R4-2014380 | TR38.717-04-02 update version 0.2.0 | Samsung Electronics GmbH | agreed |  |  |
| R4-2014381 | NR\_NTN\_solutions work plan | THALES | revised |  | R4-2017661 |
| R4-2014382 | Further discussion on numerology and CBW for above 52.6 GHz | CATT | noted |  |  |
| R4-2014383 | Discussion on SAR issues for inter-band and SUL 2UL CA PC2 | CATT | noted |  |  |
| R4-2014384 | Draft CR to TS 38.174: IAB-MT CA support and maintanance of clause 4 to 5 | CATT | not pursued |  |  |
| R4-2014385 | Draft CR to TS 38.174: maintanance of references and definitions | CATT | not pursued |  |  |
| R4-2014386 | Draft CR to TS 38.174: Transmitted signal quality maintainance | CATT | revised |  | R4-2017476 |
| R4-2014387 | Draft CR to TS 38.809: Transmitted signal quality maintainance | CATT | revised |  | R4-2017477 |
| R4-2014388 | Discussion on IAB-MT EVM measurement process | CATT | noted |  |  |
| R4-2014389 | Discussion on IAB RF test configuration | CATT | noted |  |  |
| R4-2014390 | Discussion on IAB RF test model | CATT | noted |  |  |
| R4-2014391 | Discussion on the reference conditions of IAB-MT output power dynamics | CATT | noted |  |  |
| R4-2014392 | Discussion on SAR solutions of TDD intra-band contiguous UL CA HPUE | CATT | noted |  |  |
| R4-2014393 | Discussion on UL gaps for self-calibration and monitoring | CATT | noted |  |  |
| R4-2014394 | Discussion on out of band CLTA maximum height | CATT | noted |  |  |
| R4-2014395 | CR for TS 38.141-2: Correction on half-power vertical beam width for the out of band CLTA | CATT | not pursued |  |  |
| R4-2014396 | CR for TS 38.141-2: Correction on half-power vertical beam width for the out of band CLTA | CATT | withdrawn |  |  |
| R4-2014397 | Summary of ideal and impairment results for NR HST demodulation requirements | CATT | revised |  | R4-2017557 |
| R4-2014398 | Simulation results for NR HST PUSCH demodulation requirement | CATT | noted |  |  |
| R4-2014399 | Simulation results for NR HST PRACH demodulation requirement | CATT | noted |  |  |
| R4-2014400 | Simulation results for NR PUSCH UL timing adjustment demodulation requirement | CATT | noted |  |  |
| R4-2014401 | Discussion on the BS requirements for 52.6-71GHz | CATT | noted |  |  |
| R4-2014402 | CR for TS38.101-1 Rel-15, Correction for definition of P-MPR | CATT | not pursued |  |  |
| R4-2014403 | CR for TS38.101-1 Rel-16, Correction for definition of P-MPR | CATT | withdrawn |  |  |
| R4-2014404 | CR for TS38.101-2 Rel-15, Correction for definition of P-MPR | CATT | agreed |  |  |
| R4-2014405 | CR for TS38.101-2 Rel-16, Correction for definition of P-MPR | CATT | agreed |  |  |
| R4-2014406 | CR for TS38.133 Rel-15, Correction for RRM core and test cases | CATT | agreed |  |  |
| R4-2014407 | CR for TS38.133 Rel-16, Correction for RRM core and test cases | CATT | agreed |  |  |
| R4-2014408 | CR for TS38.133, Remove duplication definition for measurement requirements for power saving | CATT | not pursued |  |  |
| R4-2014409 | Discussion on RRM test cases for power saving | CATT | noted |  |  |
| R4-2014410 | CR for TS38.133, test case for cell reselection to FR1 intra-frequency NR case for power saving | CATT | revised |  | R4-2017137 |
| R4-2014411 | Discussion on power saving demodulation test | CATT | noted |  |  |
| R4-2014412 | CR for TS38.101-4, test for PDCCH DCI format 2\_6 demodulation | CATT | not pursued |  |  |
| R4-2014413 | CR for TS36.133, Adding requirements for CSI-RS based L3 measurement | CATT | revised |  | R4-2017225 |
| R4-2014414 | Discussion on switching period for NR V2X in ITS band | CATT | noted |  |  |
| R4-2014415 | CR for TS 38.101-3, Time mask for TDM operation between NR V2X and LTE V2X in ITS band | CATT | revised |  | R4-2016808 |
| R4-2014416 | CR for 38.886, Time mask for TDM between NR V2X and LTE V2X in ITS band | CATT | revised |  | R4-2016809 |
| R4-2014417 | Discussion on single link demodulation test for NR V2X | CATT | noted |  |  |
| R4-2014418 | Discussion on multiple link demodulation test for NR V2X | CATT | noted |  |  |
| R4-2014419 | Simulation results of NR V2X demodulation test | CATT | noted |  |  |
| R4-2014420 | CR for 38.101-1: Introduce PSBCH performance requirements for NR V2X | CATT | postponed |  |  |
| R4-2014421 | Discussion on Rel-17 band combinations for Uu and V2X con-current operation | CATT | noted |  |  |
| R4-2014422 | TP on V2X\_n40A-n47A coexistence study | CATT | revised |  | R4-2016871 |
| R4-2014423 | CR for TS 38.101-1, Introduce new band combination of V2X\_n39A-n47A and V2X\_n40A-n47A | CATT | revised |  | R4-2016872 |
| R4-2014424 | CR for TS 38.101-3, Introduce new band combination of V2X\_39A-n47A, V2X\_n39A-47A, V2X\_40A-n47A and V2X\_n40A-47A | CATT | revised |  | R4-2016873 |
| R4-2014425 | Revised WID for V2X band combination | CATT | withdrawn |  |  |
| R4-2014426 | Discussion on remaining issues of PUSCH UL TA | CATT | noted |  |  |
| R4-2014427 | CR for 38.141-2: Introduction of NR PUSCH UL timing adjustment performance requirement for scenario X | CATT | revised |  | R4-2017558 |
| R4-2014428 | Discussion on RLM relaxition for NR power saving | CATT | noted |  |  |
| R4-2014429 | CR on abbreviations about CSI-RS based measurement in 38.133. | CATT | revised |  | R4-2017226 |
| R4-2014430 | CR on CSI-RS based intra-frequency measurement | CATT | merged |  |  |
| R4-2014431 | CR on CSI-RS based inter-frequency measurement. | CATT | merged |  |  |
| R4-2014432 | CR on scheduling restriction for CSI-RS based intra-frequency measurement. | CATT | merged |  |  |
| R4-2014433 | CR on CSI-RS configuration for mobility | CATT | merged |  |  |
| R4-2014434 | CR on conditions for NR CSI-RS based L3 measurement | CATT | revised |  | R4-2017318 |
| R4-2014435 | Work plan for CSI-RS based L3 measurements | CATT | revised |  | R4-2017229 |
| R4-2014436 | Updated link-level simulation assumptions for CSI-RS based L3 measurements | CATT | revised |  | R4-2017230 |
| R4-2014437 | Simulation results for CSI-RSRP measurement | CATT | noted |  |  |
| R4-2014438 | Simulation results for CSI-RSRQ measurement | CATT | noted |  |  |
| R4-2014439 | Discussion on performance requirement for CSI-RSRP | CATT | noted |  |  |
| R4-2014440 | Discussion on performance requirement for CSI-RSRQ | CATT | noted |  |  |
| R4-2014441 | CR on performance requirement for CSI-RSRP L3 measurement | CATT | merged |  |  |
| R4-2014442 | CR on performance requirement for CSI-RSRQ L3 measurement | CATT | revised |  | R4-2017320 |
| R4-2014443 | CR on performance requirement for CSI-SINR L3 measurement | CATT | merged |  |  |
| R4-2014444 | Test case for CSI-RS based L3 measurement | CATT | revised |  | R4-2017233 |
| R4-2014445 | Discussion on PRS RSTD measurement requirements | CATT | noted |  |  |
| R4-2014446 | Discussion on UE Rx-Tx time difference measurement requirements | CATT | noted |  |  |
| R4-2014447 | Discussion on PRS RSTD accuracy requirements | CATT | noted |  |  |
| R4-2014448 | Discussion on PRS RSRP accuracy requirements | CATT | noted |  |  |
| R4-2014449 | Discussion on UE Rx-Tx time difference accuracy requirements | CATT | noted |  |  |
| R4-2014450 | CR on PRS RSTD accuracy requirements | CATT | merged |  |  |
| R4-2014451 | CR on PRS-RSRP accuracy requirements | CATT | revised |  | R4-2017154 |
| R4-2014452 | CR on UE Rx-Tx time difference accuracy requirements | CATT | merged |  |  |
| R4-2014453 | Discussion on gNB measurement requirements | CATT | noted |  |  |
| R4-2014454 | Work plan for power saving demodulation | CATT | revised |  | R4-2017659 |
| R4-2014455 | Work plan for power saving RRM test cases | CATT | revised |  | R4-2017135 |
| R4-2014456 | UE parameters for the frequency range 6.425-7.125GHz, 7.025-7.125GHz and 10.0-10.5GHz | CATT | noted |  |  |
| R4-2014457 | BS parameters for the frequency range 6.425-7.125GHz, 7.025-7.125GHz and 10.0-10.5GHz | CATT | noted |  |  |
| R4-2014458 | Simulation results for 6425-7125MHz and 10-10.5GHz-downlink | CATT | revised |  | R4-2016777 |
| R4-2014459 | Simulation results for 6425-7125MHz and 10-10.5GHz-uplink | CATT | revised |  | R4-2016778 |
| R4-2014460 | TR 38.717-03-01 on Rel-17 NR inter-band Carrier Aggregation (CA) for 3 Down Link (DL) / 1 Up Link (UL) | CATT | agreed |  |  |
| R4-2014461 | Revised WID on Rel-17 NR inter-band CA of 3DL bands and 1UL band | CATT | endorsed |  |  |
| R4-2014462 | CR on Introducing NR inter-band CA for 3DL Bands and 1UL band for 38.101-1 | CATT | agreed |  |  |
| R4-2014463 | CR on Introducing NR inter-band CA for 3DL Bands and 1UL band for 38.101-3 | CATT | agreed |  |  |
| R4-2014464 | DL interruption for band combinations supporting carrier switching | CATT | noted |  |  |
| R4-2014465 | Discussion on 2Tx switching between carrier 1 and carrier 2 | CATT | noted |  |  |
| R4-2014466 | n24 emission requirements and A-MPR assumptions | Ligado Networks | noted |  |  |
| R4-2014467 | Possible FR2 exemplary band for NR based satellite networks | HUGHES Network Systems Ltd, Thales | noted |  |  |
| R4-2014468 | A-MPR and Emission Requirements for new SUL Band related to the UL of n24 | Ligado Networks | noted |  |  |
| R4-2014469 | CR to TS 36.141: Clarification on manufacturer | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014470 | CR to TS 36.141: Clarification on manufacturer | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014471 | CR to TS 36.141: Clarification on manufacturer | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014472 | CR to TS 36.141: Clarification on manufacturer | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014473 | Proposals of UE Parameters for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014474 | Proposals of BS Parameters for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014475 | TP to TR 38.921: Clarification of system level simulation assumptions for study on IMT parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz | Nokia, Nokia Shanghai Bell, ZTE | revised |  | R4-2016901 |
| R4-2014476 | Downlink Coexistence Simulation Results for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014477 | Uplink Coexistence Simulation Results for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014478 | TP to TR 38.921: Clarification of BS array antenna element peak gain for study on IMT parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz | Nokia, Nokia Shanghai Bell, ZTE | approved |  |  |
| R4-2014479 | TR 37.880 V0.1.0: High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71 | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014480 | Coexistence Simulation Results for High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71 | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014481 | TP to TR 37.880: High-power UE transmitter/receiver architecture for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71 | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2014482 | On a request sheet/WID template for band combinations | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014483 | On the Optionality of RAN4 Requirements | Qualcomm Incorporated, CMCC, KDDI, AT&T, Ericsson, Nokia, T-Mobile USA, China Telecom | withdrawn |  |  |
| R4-2014484 | IAB RF Conformance Testing | Qualcomm Incorporated | noted |  |  |
| R4-2014485 | IAB RF Testing | Qualcomm Incorporated | noted |  |  |
| R4-2014486 | Draft Reply LS on cell-grouping UE capability for synchronous NR-DC | Qualcomm Incorporated | noted |  |  |
| R4-2014487 | Handling of Channel Bandwidths That Are Not Multiples of 5MHz | Qualcomm Incorporated | noted |  |  |
| R4-2014488 | Overloading of the Per-FR gap capability | Qualcomm Incorporated | noted |  | - |
| R4-2014489 | Short Transient Period Testing | Qualcomm Incorporated | noted |  |  |
| R4-2014490 | Draft CR on introduction of shorter Transient Period Capability | Qualcomm Incorporated, Verizon, Dish Network, Ericsson, CMCC, Keysight Technologies, Nokia, Nokia Shanghai Bell, AT&T, ZTE, Vodafone, Orange, T-Mobile USA, Deutsche Telekom, Telecom Italia, CHTTL, China Telecom, SGS Wireless, Interdigital | postponed |  |  |
| R4-2014491 | Beam sweeping and test time reduction in FR2 | Fraunhofer HHI, Fraunhofer IIS | noted |  |  |
| R4-2014492 | Beam correspondence performance measurement improvements of FR2 UEs using carrier aggregation and shared antenna arrays | Fraunhofer HHI | noted |  |  |
| R4-2014493 | UE Architecture and DL MIMO Aspects for Supporting n77(3A) DL CA | Skyworks Solutions Inc. SoftBank Corp. | noted |  |  |
| R4-2014494 | CR for 38.141-2: Add error-free feedback in demodulation requirement test setup | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014495 | Band 24 and n24 A-MPR | Skyworks Solutions Inc. | noted |  |  |
| R4-2014496 | [NRU] Justification of band n96 channelization | Skyworks Solutions Inc. | noted |  |  |
| R4-2014497 | [NRU] UE REFSENS for NRU Band n96 | Skyworks Solutions Inc. | noted |  |  |
| R4-2014498 | Test applicability for NR CA PDSCH normal demodulation requirements | China Telecom | noted |  |  |
| R4-2014499 | Power imbalance requirements for FR1 CA and EN-DC | China Telecom | noted |  |  |
| R4-2014500 | Duplex mode and SCS for CA CQI test | China Telecom | noted |  |  |
| R4-2014501 | Draft CR for TS 38.307 on UE demodulation performance requirements (Rel-15) | China Telecom | revised |  | R4-2017564 |
| R4-2014502 | Draft CR for TS 38.307 on UE demodulation performance requirements (Rel-16) | China Telecom | revised |  | R4-2017565 |
| R4-2014503 | Discussion on test case for DL interruptions at UE switching between two uplink carriers | China Telecom | noted |  |  |
| R4-2014504 | Draft CR to TS 38.133: Test case for DL interruptions at UE switching between two uplink carriers in FDD+TDD inter-band CA case | China Telecom | revised |  | R4-2017324 |
| R4-2014505 | CR to TS 38.133: Add information on the inter-band EN-DC and UL CA configurations with no DL interruption | China Telecom | agreed |  |  |
| R4-2014506 | CR to TS 36.133: Add information on the inter-band EN-DC configurations with no DL interruption | China Telecom | agreed |  |  |
| R4-2014507 | UE Support for Irregular Channel Bandwidths - Options and Constraints | Skyworks Solutions Inc. | noted |  |  |
| R4-2014508 | PC2 UL CA Class B/C UE Architecture and MPR/A-MPR evaluation | Skyworks Solutions Inc., Apple Inc. | noted |  |  |
| R4-2014509 | CR for 38.141-2: Add error-free feedback in demodulation requirement test setup | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014510 | LTE CA corrections | Nokia | agreed |  |  |
| R4-2014511 | Band 88 and 87 bracket removal | Nokia | agreed |  |  |
| R4-2014512 | REL16 eBC capability alingment with 38.306 | Nokia, Nokia Shanghai Bell | revised |  | R4-2016821 |
| R4-2014513 | TR skeleton for Rel-17 FR2 UE RF WI | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014514 | Work plan for New WID on NR RF Enhancements for FR2 | Nokia, Nokia Shanghai Bell | approved |  |  |
| R4-2014515 | FR2 interband CA CBM vs IBM | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014516 | FR2 gaps | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014517 | n53 bracket removal | Nokia | agreed |  |  |
| R4-2014518 | A-MPR definition for CA\_n7B, CA\_n48B, CA\_n41B and CA\_n41C | Nokia | revised |  | R4-2016814 |
| R4-2014519 | Simulation results for CA\_7B A-MPR. | Nokia | noted |  |  |
| R4-2014520 | TS 38.101-3: Addition of missing lower order fallbacks | Nokia, AT&T | revised |  | R4-2016832 |
| R4-2014521 | TR 37.716-21-11: Addition of missing lower order fallbacks | Nokia, AT&T | revised |  | R4-2016833 |
| R4-2014522 | draft CR for NR inter-band CA for 2 bands DL | Nokia, T-Mobile USA | revised |  | R4-2016681 |
| R4-2014523 | draft CR for NR inter-band CA for 3 bands DL | Nokia, T-Mobile USA | endorsed |  |  |
| R4-2014524 | TP for TR 38.717-02-01: CA\_n41-n77 | Nokia, T-Mobile USA | revised |  | R4-2016682 |
| R4-2014525 | TP for TR 38.717-02-01: CA\_n71A-n77A | Nokia, T-Mobile USA | revised |  | R4-2016683 |
| R4-2014526 | TP for TR 38.717-03-01: CA\_n1A-n8A-n78(2A) | Nokia, Telefonica | revised |  | R4-2016754 |
| R4-2014527 | Discussion on remaining issues of R16 UE power saving | vivo | noted |  |  |
| R4-2014528 | CR on RRM relaxation in R16 UE power saving | vivo | not pursued |  |  |
| R4-2014529 | Discussion on DCP test cases for R16 UE power saving | vivo | noted |  |  |
| R4-2014530 | Discussion on remaining issues for R16 CSI-RS based L3 measurements | vivo | noted |  |  |
| R4-2014531 | CR on R16 CSI-RS based L3 measurements | vivo | revised |  | R4-2017227 |
| R4-2014532 | CR on test cases for EN-DC CSI-SINR measurement accuracy | vivo | revised |  | R4-2017312 |
| R4-2014533 | CR on test case for EUTRAN-NR cell re-selection in HST | vivo | revised |  | R4-2017246 |
| R4-2014534 | Evaluation assumptions for R17 RLM/BFD relaxation | vivo, MediaTek | revised |  | R4-2017306 |
| R4-2014535 | Discussion and initial results for R17 RLM/BFD relaxation | vivo | noted |  |  |
| R4-2014536 | Channel Model Assumptions | Spirent Communications | noted |  |  |
| R4-2014537 | Discussion on V2X work scope and general simulation assumptions | Intel Corporation | noted |  |  |
| R4-2014538 | Discussion on Single Link V2X requirements | Intel Corporation | noted |  |  |
| R4-2014539 | Discussion on Multiple Link V2X requirements | Intel Corporation | noted |  |  |
| R4-2014540 | Discussion on PDCCH-WUS requirements | Intel Corporation | noted |  |  |
| R4-2014541 | Simulation results for Ultra-low BLER UE demodulation requirements | Intel Corporation | noted |  |  |
| R4-2014542 | Discussion on CSI requirements for Ultra-low BLER | Intel Corporation | noted |  |  |
| R4-2014543 | Simulation results for Ultra-low BLER BS requirements | Intel Corporation | noted |  |  |
| R4-2014544 | Discussion on UE demodulation requirements for URLLC | Intel Corporation | noted |  |  |
| R4-2014545 | Discussion on BS demodulation requirements for URLLC | Intel Corporation | noted |  |  |
| R4-2014546 | Discussion on UE demodulation requirements for FR2 DL 256QAM | Intel Corporation | noted |  |  |
| R4-2014547 | Summary of simulation results FR2 DL 256QAM demodulation requirements | Intel Corporation | noted |  |  |
| R4-2014548 | Discussion on SDR requirements for FR2 DL 256QAM | Intel Corporation | noted |  |  |
| R4-2014549 | Discussion on NR CA UE demodulation requirements | Intel Corporation | noted |  |  |
| R4-2014550 | Draft CR on FRC for Normal NR CA demodulation requirements | Intel Corporation | agreed |  |  |
| R4-2014551 | Discussion on PMI Type I requirements | Intel Corporation | noted |  |  |
| R4-2014552 | Discussion on FR1 CA and EN-DC power imbalance requirements | Intel Corporation | noted |  |  |
| R4-2014553 | Views on UE demodulation requirements for DPS transmission scheme for NR HST | Intel Corporation | noted |  |  |
| R4-2014554 | Simulation results for NR HST PRACH | Intel Corporation | noted |  |  |
| R4-2014555 | Simulation results for NR HST PUSCH | Intel Corporation | noted |  |  |
| R4-2014556 | Views on UE demodulation requirements for multi-DCI based multi-TRP Tx schemes | Intel Corporation | noted |  |  |
| R4-2014557 | Views on UE demodulation requirements for single-DCI based multi-TRP SDM Tx scheme | Intel Corporation | noted |  |  |
| R4-2014558 | Views on UE demodulation requirements for single-DCI based multi-TRP Repetition Tx schemes | Intel Corporation | noted |  |  |
| R4-2014559 | CR to TS 38.101-4: Performance requirements single-DCI based multi-TRP Repetition Tx schemes | Intel Corporation | revised |  | R4-2017534 |
| R4-2014560 | Views on BS demodulation requirements for NR 2-Step RACH | Intel Corporation | noted |  |  |
| R4-2014561 | CR to TS 38.141-2: BS demodulation requirements for 2-step RACH (Annex) | Intel Corporation | revised |  | R4-2017633 |
| R4-2014562 | CR to TS 38.101-4: HST-SFN FDD performance requirements | Intel Corporation | revised |  | R4-2017542 |
| R4-2014563 | CR to TS 38.101-4: Propagation conditions for HST scenarios | Intel Corporation | revised |  | R4-2017539 |
| R4-2014564 | Views on high speed train deployments scenarios in FR2 | Intel Corporation | noted |  |  |
| R4-2014565 | Discussion of RRC based BWP switching on single CC | Intel Corporation | noted |  |  |
| R4-2014566 | Work plan of Rel-16 NR RRM enhancements WI performance part | Intel Corporation, ZTE Corporation, Apple | revised |  | R4-2017222 |
| R4-2014567 | Discussion on test cases for BWP switching on multiple CCs | Intel Corporation | noted |  |  |
| R4-2014568 | CR on simultaneous DCI-based and Timer-based Active BWP Switch on multiple CCs on FR1 in EN-DC (section 4.5.6.3) | Intel Corporation | postponed |  |  |
| R4-2014569 | Discussion on test cases for UL spatial relation switch | Intel Corporation | noted |  |  |
| R4-2014570 | Discussion of RRC based BWP switching on multiple CCs | Intel Corporation | noted |  |  |
| R4-2014571 | Discussion on NR Positioning test cases configuration and list | Intel Corporation | noted |  |  |
| R4-2014572 | Draft CR to TS 38.133: PRS configurations for NR Pos RRM tests | Intel Corporation | revised |  | R4-2017156 |
| R4-2014573 | Further discussion on NR PRS RSTD measurement report requirements | Intel Corporation | noted |  |  |
| R4-2014574 | Discussion on NR PRS RSTD Measurement Accuracy Requirements | Intel Corporation | noted |  |  |
| R4-2014575 | Discussion on UE RX-TX time difference measurement requirements | Intel Corporation | noted |  |  |
| R4-2014576 | Discussion on UE RX-TX time difference measurement accuracy requirements | Intel Corporation | noted |  |  |
| R4-2014577 | Link-level simulation results for UE RX-TX time difference measurement | Intel Corporation | noted |  |  |
| R4-2014578 | Discussion on PRS RSRP accuracy requirements for NR Positioning | Intel Corporation | noted |  |  |
| R4-2014579 | Link-level simulation results for PRS RSRP measurement | Intel Corporation | noted |  |  |
| R4-2014580 | Intra-band Inter-frequency sync DAPS handover test in SA for FR1 | Intel Corporation | revised |  | R4-2017096 |
| R4-2014581 | CR to 38.101-2 (Rel-16) inter-band DL CA | Intel Corporation | revised |  | R4-2016825 |
| R4-2014582 | CR to 38.101-3 (Rel-16) error correntions to configurations for CA and DC | Intel Corporation | agreed |  |  |
| R4-2014583 | Remaining Issues on Transparent TxD | Intel Corporation | noted |  |  |
| R4-2014584 | On CSI-RS based beam correspondence | Intel Corporation | noted |  |  |
| R4-2014585 | Rel-16 Inter-band DL CA requirements | Intel Corporation | noted |  |  |
| R4-2014586 | CBM IBM Applicability for Inter-Band DL CA | Intel Corporation | noted |  |  |
| R4-2014587 | On IBM feasibility for CA configurations within same frequency group | Intel Corporation | noted |  |  |
| R4-2014588 | UE requirements for CA configurations within the same frequency group based on CBM | Intel Corporation | noted |  |  |
| R4-2014589 | UE requirements for CA\_258A-n260A and CA\_257A-n259A based on IBM | Intel Corporation | noted |  |  |
| R4-2014590 | On performance improvements from self-calibration in UL gaps | Intel Corporation | noted |  |  |
| R4-2014591 | Draft CR on correcting SSB and RACH configuration in CSI-RS based beam failure detection and link recovery tests | Qualcomm CDMA Technologies | revised |  | R4-2017048 |
| R4-2014592 | Draft CR on correcting SSB and RACH configuration in CSI-RS based beam failure detection and link recovery tests | Qualcomm CDMA Technologies | postponed |  | - |
| R4-2014593 | n40 MPR and Interference for Additional Channel Bandwidths | Skyworks Solutions Inc. | noted |  |  |
| R4-2014594 | Proposal to extend R17 FeRRM WI scope | Apple | not treated |  |  |
| R4-2014595 | TP for CA 3DL2UL n1-n77-n79 for TR 38.717-03-02 | NTT DOCOMO, INC., MediaTek Inc., LG Electronics | revised |  | R4-2016757 |
| R4-2014596 | General corrections for V2X sections in 38.101-3 | Qualcomm Incorporated | revised |  | R4-2016811 |
| R4-2014597 | Clarification of EIS spherical coverage for inter-band CA | Qualcomm Incorporated | revised |  | R4-2016826 |
| R4-2014598 | More on an alternative to creating new BCSs | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014599 | TP for CA 3DL2UL n1-n78-n79 for TR 38.717-03-02 | NTT DOCOMO, INC., MediaTek Inc., LG Electronics | revised |  | R4-2016758 |
| R4-2014600 | CR on adding NR ovelapping bands list in TS38.307 in Rel-15 | LG Electronics France | revised |  | R4-2016846 |
| R4-2014601 | CR on TS 38.133 for radio link monitoring test case R15 | MediaTek inc. | postponed |  |  |
| R4-2014602 | CR on TS 38.133 for radio link monitoring test case R16 | MediaTek inc. | withdrawn |  |  |
| R4-2014603 | Discussion on L1-SINR measurement accuracy requirement | MediaTek inc. | noted |  |  |
| R4-2014604 | Discussion on test cases for L1-SINR measurement | MediaTek inc. | noted |  |  |
| R4-2014605 | Discussion on test cases for SCell BFR | MediaTek inc. | noted |  |  |
| R4-2014606 | Introduction of test cases for BFD and link recovery procedure for Scell | MediaTek inc. | revised |  | R4-2017170 |
| R4-2014607 | Draft CR for TS 38.101-3: Support of Uplink n257D/G/H/I for DC\_8\_n257 and DC\_11\_n257 | SoftBank Corp. | endorsed |  |  |
| R4-2014608 | TP for DC\_19\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC., MediaTek Inc. | revised |  | R4-2016717 |
| R4-2014609 | Draft CR for TS 38.101-3: Support of Uplink n257D/G/H/I for DC\_1-8\_n257, DC\_1-11\_n257, DC\_3-8\_n257 and DC\_8-11\_n257 | SoftBank Corp. | endorsed |  |  |
| R4-2014610 | TP for DC\_19\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC., MediaTek Inc. | revised |  | R4-2016718 |
| R4-2014611 | Draft CR for TS 38.101-3: Support of Uplink n257D/G/H/I for DC\_1-3-8\_n257 and DC\_1A-8-11\_n257 | SoftBank Corp. | endorsed |  |  |
| R4-2014612 | TP for TR 37.717-21-11: EN-DC\_1-42\_n3 | SoftBank Corp. | approved |  |  |
| R4-2014613 | TP for TR 37.717-21-11: EN-DC\_8-42\_n3 | SoftBank Corp. | approved |  |  |
| R4-2014614 | TP update for TR 37.717-21-11: EN-DC\_1-11\_n28 | SoftBank Corp., LG Electronics | revised |  | R4-2016662 |
| R4-2014615 | TP for TR 37.717-31-11: EN-DC\_1-3-11\_n28 | SoftBank Corp. | approved |  |  |
| R4-2014616 | TP for TR 37.717-31-11: EN-DC\_1-3-11\_n77 | SoftBank Corp. | approved |  |  |
| R4-2014617 | TP for TR 37.717-31-11: EN-DC\_3-8-11\_n28 | SoftBank Corp. | approved |  |  |
| R4-2014618 | TP for TR 37.717-31-11: EN-DC\_3-8-11\_n77 | SoftBank Corp. | approved |  |  |
| R4-2014619 | TP for TR 37.717-31-11: EN-DC\_1-8-11\_n28 | SoftBank Corp. | approved |  |  |
| R4-2014620 | CR on adding NR ovelapping bands list in TS38.307 in Rel-16 | LG Electronics France | revised |  | R4-2016847 |
| R4-2014621 | Discussion on LS on UE capability on wideband carrier operation for NR-U | MediaTek inc. | noted |  |  |
| R4-2014622 | On remaining issues for CSI-RS based L3 measurement | MediaTek inc. | noted |  |  |
| R4-2014623 | Introduction of CSSF requirements for CSI-RS based L3 measurement | MediaTek inc., CATT | postponed |  |  |
| R4-2014624 | CSI-RSRP measurement accuracy requirements | MediaTek inc. | noted |  |  |
| R4-2014625 | CSI-SINR measurement accuracy requirements | MediaTek inc. | noted |  |  |
| R4-2014626 | Introduction of test case for CSI-SINR in SA FR2 | MediaTek inc. | revised |  | R4-2017235 |
| R4-2014627 | Discussion on UE feature list | MediaTek inc. | noted |  |  |
| R4-2014628 | Work plan of R17 NR and MR-DC measurement gap enhancements WI | MediaTek inc., Intel Corporation | revised |  | R4-2017266 |
| R4-2014629 | Discussion on TCI state activation in direct SCell activation | MediaTek inc. | noted |  |  |
| R4-2014630 | NR HST test case discussion | Qualcomm, Inc. | noted |  |  |
| R4-2014631 | CR-NR HST RRM test cases | Qualcomm, Inc. | revised |  | R4-2017247 |
| R4-2014632 | FR2 HST analysis framework | Qualcomm, Inc. | noted |  |  |
| R4-2014633 | View on NR HST demod | Qualcomm, Inc. | noted |  |  |
| R4-2014634 | NR V2X RRM core and performance requirement remaining issues | Qualcomm, Inc. | noted |  |  |
| R4-2014635 | CR: Interruption requirement for NR V2X synchronization source chang | Qualcomm, Inc. | revised |  | R4-2017345 |
| R4-2014636 | NR V2X Demod multiple linkrequirement | Qualcomm, Inc. | noted |  |  |
| R4-2014637 | NR V2X Demod single link requirement | Qualcomm, Inc. | noted |  |  |
| R4-2014638 | CR: Demod HARQ buffer soft combining test cases for NR V2X | Qualcomm, Inc. | postponed |  |  |
| R4-2014639 | CR: RRM autonomous resource selection test cases for NR V2X | Qualcomm, Inc. | revised |  | R4-2017109 |
| R4-2014640 | NR V2X RRM test case discussion | Qualcomm, Inc. | noted |  |  |
| R4-2014641 | NR V2X inter-RAT Tx switch | Qualcomm, Inc. | noted |  |  |
| R4-2014642 | CGI reading test scope and requirement discussion | Qualcomm, Inc. | noted |  |  |
| R4-2014643 | Mandatory gap pattern test scope and applicability rule discussion | Qualcomm, Inc. | noted |  |  |
| R4-2014644 | Mandatory gap pattern test | Qualcomm, Inc. | merged |  |  |
| R4-2014645 | Inter-f without MG test scope and configuration discussion | Qualcomm, Inc. | noted |  |  |
| R4-2014646 | 38.133 CR on conditions for NR SRS carrier switching | Qualcomm, Inc. | postponed |  | - |
| R4-2014647 | TP for TR 37.717-11-21: EN-DC\_11\_n3-n77 | SoftBank Corp. | revised |  | R4-2016719 |
| R4-2014648 | TP for TR 37.717-11-21: EN-DC\_11\_n28-n77 | SoftBank Corp. | approved |  |  |
| R4-2014649 | TR Skeleton for TR 37.826 v0.0.1 ENDC\_UE\_PC2\_R17\_NR\_TDD | China Unicom | agreed |  |  |
| R4-2014650 | TP for TR 37.717-11-21: EN-DC\_42\_n3-n28 | SoftBank Corp. | approved |  |  |
| R4-2014651 | TP for TR 37.717-11-21: EN-DC\_42\_n3-n77 | SoftBank Corp. | approved |  |  |
| R4-2014652 | Discussion on NR V2X single link test cases | LG Electronics Inc. | noted |  |  |
| R4-2014653 | TP for TR 37.717-11-21: EN-DC\_1-8\_n3-n77 | SoftBank Corp. | approved |  |  |
| R4-2014654 | Discussion on RRM measurement relaxation in connected mode for NR power saving enhancement | Xiaomi | noted |  |  |
| R4-2014655 | RRM test cases for NR V2X Synchronization Reference Selection/Reselection | Xiaomi | revised |  | R4-2017108 |
| R4-2014656 | RRM test cases for NR UE power saving | Xiaomi | revised |  | R4-2017138 |
| R4-2014657 | Discussion on test cases for power saving RRM | Xiaomi | noted |  |  |
| R4-2014658 | Initial discussion on RRM impact for NR NTN system | Xiaomi | noted |  |  |
| R4-2014659 | Discussion on performance requirements for CSI-RS L3 measurements | Xiaomi | noted |  |  |
| R4-2014660 | Maintenance on CSI-RS based L3 requirements | Xiaomi | merged |  |  |
| R4-2014661 | CR on CSI-RSRP performance requirements for CSI-RS based measurements | Xiaomi | merged |  |  |
| R4-2014662 | CR on CSI-RSRQ performance requirements for CSI-RS based L3 measurements | Xiaomi | merged |  |  |
| R4-2014663 | CR on CSI-SINR performance requirements for CSI-RS based L3 measurements | Xiaomi | merged |  |  |
| R4-2014664 | CR on side conditions for CSI-RS based intra-frequency and inter-frequency measurements | Xiaomi | merged |  |  |
| R4-2014665 | RRM test cases for CSI-RS L3 intra-frequency and inter-frequency measurements | Xiaomi | revised |  | R4-2017234 |
| R4-2014666 | RRM test cases for CSI-RS L3 measurement performance | Xiaomi | revised |  | R4-2017314 |
| R4-2014667 | TP for TR 37.717-11-21: EN-DC\_1-11\_n3-n28 | SoftBank Corp. | approved |  |  |
| R4-2014668 | Initial simulation results for NR V2X single link test cases | LG Electronics Inc. | noted |  |  |
| R4-2014669 | Discussion on NR V2X multiple link test cases | LG Electronics Inc. | noted |  |  |
| R4-2014670 | Initial simulation results for NR V2X multiple link test cases | LG Electronics Inc. | noted |  |  |
| R4-2014671 | Fine/rough beam assumption for CLI performance test cases | LG Electronics Inc. | agreed |  |  |
| R4-2014672 | On PMI reporting requirements for larger Tx ports | China Telecom | noted |  |  |
| R4-2014673 | DraftCR: Adding applicability and requirements for FR1 and FR2 CA CQI reporting test | China Telecom | endorsed |  |  |
| R4-2014674 | Updated work plan for FR2 DL 256QAM demodulation and CSI reporting requirements | China Telecom | approved |  |  |
| R4-2014675 | On UE demodulation requirements for FR2 DL 256QAM | China Telecom | noted |  |  |
| R4-2014676 | On SDR requirements for FR2 DL 256QAM | China Telecom | noted |  |  |
| R4-2014677 | On CQI reporting requirements for FR2 DL 256QAM | China Telecom | noted |  |  |
| R4-2014678 | Summary of CQI reporting simulation results for FR2 DL 256QAM (TDD) | China Telecom | noted |  |  |
| R4-2014679 | TP for TR 37.826 to introduce PC2 for DC\_1A\_n78A | China Unicom | revised |  | R4-2016856 |
| R4-2014680 | TP for TR 37.826 to introduce PC2 for DC\_8A\_n78A | China Unicom | revised |  | R4-2016857 |
| R4-2014681 | TP for TR 37.717-11-21: EN-DC\_8-11\_n3-n28 | SoftBank Corp. | approved |  |  |
| R4-2014682 | UL output power for spurious response and general Rx | Anritsu corporation, Apple Inc. | agreed |  |  |
| R4-2014683 | UL output power for spurious response and general Rx | Anritsu corporation, Apple Inc. | agreed |  |  |
| R4-2014684 | Transmission gap for relative power tolerance in FR2 | Anritsu corporation | agreed |  |  |
| R4-2014685 | Transmission gap for relative power tolerance in FR2 | Anritsu corporation | agreed |  |  |
| R4-2014686 | Remaining items on transparent Tx diversity | Anritsu corporation | noted |  |  |
| R4-2014687 | Testability of FR2 inter-band DL 2CA EIS by non co-located antenna | Anritsu corporation | noted |  |  |
| R4-2014688 | Effect of White Box Approach on Simple-Sectored Multi-Probe Anechoic Chamber Design | BUPT | noted |  |  |
| R4-2014689 | TP for TR 37.717-11-21: EN-DC\_1-8-42\_n28-n77 | SoftBank Corp. | approved |  |  |
| R4-2014690 | CR on HST-SFN requirements for TDD | CMCC | revised |  | R4-2017541 |
| R4-2014691 | 38.133 CR on CSSFintra for measurement period for intra-frequency measurements in connected mode for Rel-16 NR HST | CMCC | revised |  | R4-2017242 |
| R4-2014692 | Draft CR on NR-NR intra-frequency reselection for FR1 for high speed scenario | CMCC | revised |  | R4-2017248 |
| R4-2014693 | CR on carrier frequency range of PCell/PSCell for the maximum number of RLM-RS resources | CMCC | agreed |  |  |
| R4-2014694 | CR on carrier frequency range of PCell/PSCell for the maximum number of RLM-RS resources | CMCC | agreed |  |  |
| R4-2014695 | CR on release independent for Rel.16 NR HST RRM requirements | CMCC | revised |  | R4-2017243 |
| R4-2014696 | CR on release independent for Rel.16 NR HST UE demodulation requirements | CMCC | revised |  | R4-2017543 |
| R4-2014697 | CR on release independent for Rel.16 NR HST RRM requirements | CMCC | revised |  | R4-2017244 |
| R4-2014698 | CR on release independent for Rel.16 NR HST UE demodulation requirements | CMCC | revised |  | R4-2017544 |
| R4-2014699 | Discussion on test cases for CSI-RS based RRM measurement | CMCC | noted |  |  |
| R4-2014700 | Discussion on applicability rule for UE demodulation requirements for NR HST | CMCC | noted |  |  |
| R4-2014701 | Further discussion on DPS for NR HST | CMCC | noted |  |  |
| R4-2014702 | Discussion on remaining issues for NR HST BS demodulation | CMCC | noted |  |  |
| R4-2014703 | Simulation results for CSI-RSRP measurement | CMCC | noted |  |  |
| R4-2014704 | Simulation results for DPS transmission scheme | CMCC | noted |  |  |
| R4-2014705 | Work plan for enhancement for NR high speed train scenario in FR1 | CMCC | revised |  | R4-2017267 |
| R4-2014706 | TP for TR 37.716-11-31: EN-DC\_1\_n3-n28-n77 | SoftBank Corp. | revised |  | R4-2016765 |
| R4-2014707 | TP for TR 37.717-11-31: EN-DC\_8\_n3-n28-n77 | SoftBank Corp. | revised |  | R4-2016766 |
| R4-2014708 | Big CR on introduction of completed PC2 for EN-DC with 1 LTE band + 1 NR TDD band | China Unicom | agreed |  |  |
| R4-2014709 | Big CR on introduction of completed PC2 for EN-DC with 1 LTE band + 1 NR TDD band | China Unicom | withdrawn |  |  |
| R4-2014710 | Effect of White Box Approach on Simple-Sectored Multi-Probe Anechoic Chamber Design | BUPT | withdrawn |  |  |
| R4-2014711 | PCC SCC prioritization issue solution | Qualcomm Incorporated | noted |  |  |
| R4-2014712 | Tx diversity changes for Rel-16 | Qualcomm Incorporated | noted |  |  |
| R4-2014713 | Introduction of Tx diversity in tor 38101-1 | Qualcomm Incorporated | not pursued |  |  |
| R4-2014714 | DC location future compatible proposal | Qualcomm Incorporated | noted |  |  |
| R4-2014715 | Inter-band UL CA for FR2 | Qualcomm Incorporated | noted |  |  |
| R4-2014716 | UE calibration gap motivation and view to the requirements | Qualcomm Incorporated | noted |  |  |
| R4-2014717 | Discussion on 2Tx-2tx switching comapred to the 1Tx-2Tx case | Qualcomm Incorporated | noted |  |  |
| R4-2014718 | CR to TS38.101-1 on DC location correction | Samsung | revised |  | R4-2016781 |
| R4-2014719 | CR to TS38.101-1 on DC location correction | Samsung | agreed |  |  |
| R4-2014720 | CR to TS38.101-2 on DC location correction | Samsung | revised |  | R4-2016786 |
| R4-2014721 | CR to TS38.101-2 on DC location correction | Samsung | agreed |  |  |
| R4-2014722 | Discussion on Rel-16 beam correspondence remaining issues | Samsung | noted |  |  |
| R4-2014723 | Discussion on FR1 and FR2 MIMO OTA | Samsung | noted |  |  |
| R4-2014724 | Discussion on Rel-17 FR2 inter-band CA | Samsung | noted |  |  |
| R4-2014725 | Discussion on FR2 EIRP measurement enhancement | Samsung | noted |  |  |
| R4-2014726 | Discussion on FR2 test time reduction | Samsung | noted |  |  |
| R4-2014727 | Demodulation on UE power saving | CMCC | noted |  |  |
| R4-2014728 | Discussion on FR1 CA and EN-DC power imbalance requirements | CMCC | noted |  |  |
| R4-2014729 | Introduction of NR PDSCH FR1 CA 2Rx performance requirements | CMCC | revised |  | R4-2017567 |
| R4-2014730 | Test applicability rule for NR CA PDSCH normal demodulation | CMCC | noted |  |  |
| R4-2014731 | Discussion on test case on inter-frequency measurement without MG | CMCC | noted |  |  |
| R4-2014732 | Draft CR to TS 38.133: SA event triggered reporting tests for FR1 without gap when DRX is not used (A.6.6.2.X) | CMCC | revised |  | R4-2017215 |
| R4-2014733 | Discussion on test case on TX switching between two TDD uplink carriers | CMCC | noted |  |  |
| R4-2014734 | Draft CR to TS 38.133: Test case for DL interruptions at UE switching between two uplink carriers in TDD+TDD inter-band CA case | CMCC | revised |  | R4-2017325 |
| R4-2014735 | Draft CR: Introduce NR SUL bands n80 to UL-MIMO configuration | CMCC | endorsed |  |  |
| R4-2014736 | LS on removing restriction on configuring UL MIMO for SUL band | CMCC | revised |  | R4-2016909 |
| R4-2014737 | Bandwidth and numerology for NR in 52.6GHz | CMCC | noted |  |  |
| R4-2014738 | Discussion on remaining issues for 6425-7125 BS parameter | CMCC | noted |  |  |
| R4-2014739 | UL Tx switching related RF requirements for R17 new scenarios | CMCC | noted |  |  |
| R4-2014740 | Views and simulation results for Rel-16 Type II PMI test case | Samsung | noted |  |  |
| R4-2014741 | Views for Multi-Panel/TRP transmision schemes | Samsung | noted |  |  |
| R4-2014742 | Simulation results summary for Rel-16 eMIMO WI | Samsung | noted |  |  |
| R4-2014743 | Simulation results for Single-DCI SDM scheme | Samsung | noted |  |  |
| R4-2014744 | Simulation results for Multi-DCI transmission schemes | Samsung | noted |  |  |
| R4-2014745 | Simulation results for Single-DCI URLLC schemes | Samsung | noted |  |  |
| R4-2014746 | Views and simulation results for Rel-15 Type II PMI test case | Samsung | noted |  |  |
| R4-2014747 | Draft CR for introduction of Rel-15 Type II PMI test cases | Samsung | revised |  | R4-2017535 |
| R4-2014748 | Draft CR for introduction of Rel-15 Type II PMI test cases | Samsung | revised |  | R4-2017569 |
| R4-2014749 | Discussion on remaining issues for 6425-7125 BS parameter | CMCC | noted |  |  |
| R4-2014750 | On IAB conformance testing | Samsung | noted |  |  |
| R4-2014751 | Draft CR with correction on section 4 | Samsung | not pursued |  |  |
| R4-2014752 | Correction CR on TR38.809 | Samsung | revised |  | R4-2017473 |
| R4-2014753 | Revised WID on NR CA/DC with 4DL/2UL | Samsung | endorsed |  |  |
| R4-2014754 | CR on introduction of completed NR CA/DC combs with 4DL/2UL within FR1 | Samsung | agreed |  |  |
| R4-2014755 | CR on introduction of completed NR CA/DC combs with 4DL/2UL including FR2 | Samsung | agreed |  |  |
| R4-2014756 | Discussion on RRM Performance part for Rel-16 NR eMIMO | Samsung | noted |  |  |
| R4-2014757 | DraftCR on L1-SINR measurement test case with CSI-RS CMR and dedicated IMR | Samsung | revised |  | R4-2017168 |
| R4-2014758 | Simulation results summary for L1-SINR measurement accuracy | Samsung | noted |  |  |
| R4-2014759 | Discussion on L1-SINR measurement accuracy requirement | Samsung | noted |  |  |
| R4-2014760 | Remaining issues on RRM in R15 | MediaTek inc. | noted |  |  |
| R4-2014761 | CR on active BWP switch in R15 | MediaTek inc. | merged |  |  |
| R4-2014762 | CR on active BWP switch in R16 | MediaTek inc. | merged |  |  |
| R4-2014763 | CR on active TCI state switching delay in R15 | MediaTek inc. | postponed |  |  |
| R4-2014764 | CR on active TCI state switching delay in R16 | MediaTek inc. | withdrawn |  |  |
| R4-2014765 | CR on MO merge in R15 | MediaTek inc. | revised |  | R4-2017336 |
| R4-2014766 | CR on MO merge in R16 | MediaTek inc. | withdrawn |  |  |
| R4-2014767 | Remaining issues on NR V2X RRM requirement | MediaTek inc. | noted |  |  |
| R4-2014768 | Discussion on L1 SL-RSRP measurement test case | MediaTek inc. | noted |  |  |
| R4-2014769 | CR on V2X UE Resource Selection Tests for Re-evaluation | MediaTek inc. | revised |  | R4-2017110 |
| R4-2014770 | CR on V2X UE Congestion Control Measurement Test | MediaTek inc. | revised |  | R4-2017111 |
| R4-2014771 | Remaining issues on active spatial relation switch | MediaTek inc. | noted |  |  |
| R4-2014772 | Remaining Issues on multiple SCell Activation | MediaTek inc. | noted |  |  |
| R4-2014773 | Remaining issues on multiple BWP switch | MediaTek inc. | noted |  |  |
| R4-2014774 | CR on multiple BWP switch in R16 | MediaTek inc. | postponed |  |  |
| R4-2014775 | DraftCR on spatial relation switch test case | MediaTek inc. | revised |  | R4-2017177 |
| R4-2014776 | DraftCR on SA CGI identification of E-UTRA neighbor cell Test Case | MediaTek inc. | revised |  | R4-2017194 |
| R4-2014777 | DraftCR on multiple SCell activation with FR1+FR2 unknown cells in NR-DC Test Case | MediaTek inc. | revised |  | R4-2017211 |
| R4-2014778 | Discussion on multiple BWP switch test case | MediaTek inc. | noted |  |  |
| R4-2014779 | Discussion on V2X Demod test case | MediaTek inc. | noted |  |  |
| R4-2014780 | CR on NR V2X PSFCH demodulation requirements | MediaTek inc. | postponed |  |  |
| R4-2014781 | Revised WID on Dual Connectivity (DC) of 5 bands LTE inter-band CA (5DL/1UL) and 1 NR band (1DL/1UL) | Samsung | endorsed |  |  |
| R4-2014782 | CR introduction completed band combinations for Dual Connectivity (DC) of 5 bands LTE inter-band CA (5DL/1UL) and 1 NR band (1DL/1UL) | Samsung | agreed |  |  |
| R4-2014783 | CR introduction completed band combinations for Dual Connectivity (DC) of x bands (x=2,3,4) LTE inter-band CA (xDL/1UL) and 1 NR FR1 band (1DL/1UL) and 1 NR FR2 band (1DL/1UL) | Samsung | agreed |  |  |
| R4-2014784 | Revised WID on Dual Connectivity (DC) of x bands (x=2,3,4) LTE inter-band CA (xDL/1UL) and 1 NR FR1 band (1DL/1UL) and 1 NR FR2 band (1DL/1UL) | Samsung | endorsed |  |  |
| R4-2014785 | Views on NTN bands and coexistence study | Samsung | noted |  |  |
| R4-2014786 | TR 37.717-11-11 v0.2.0 Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL) | CHTTL | agreed |  |  |
| R4-2014787 | Revised WID for Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL) | CHTTL | endorsed |  |  |
| R4-2014788 | Big CR for Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL) | CHTTL | agreed |  |  |
| R4-2014789 | CR to TS 38.133 TC for E-UTRAN | OPPO | revised |  | R4-2017184 |
| R4-2014790 | Discussion on accuracy requirements for CSI-RS L3 measurements | OPPO | noted |  |  |
| R4-2014791 | CR to TS 38.133 on CSI-RSRP measurement accuracy(section 10.1) | OPPO | merged |  |  |
| R4-2014792 | CR to TS 38.133 on CSI-RSRQ measurement accuracy(section 10.1) | OPPO | merged |  |  |
| R4-2014793 | CR to TS 38.133: EN-DC event triggered reporting tests for NR neighbour cell in FR2 (PScell in FR1) for CSI-RS L3 inter-frequency measurements(A.5.6.x) | OPPO | revised |  | R4-2017236 |
| R4-2014794 | CR to TS 38.133: TC for EN-DC CSI-RSRQ measurement accuracy for all NR cells in FR1(A.4.7.x) | OPPO | revised |  | R4-2017310 |
| R4-2014795 | CR to TS 38.133: TC for EN-DC CSI-RSRQ measurement accuracy for all NR cells in FR2(A.5.7.x) | OPPO | revised |  | R4-2017311 |
| R4-2014796 | CR on interruptions at E-UTRA SRS carrier based switching in TS38.133 | OPPO | revised |  | R4-2017067 |
| R4-2014797 | Discussion on RLM BFD measurement relaxation | OPPO | noted |  |  |
| R4-2014798 | CR to TS 38.133 on measurement period requirements for PRS RSTD, PRS-RSRP and UE Rx-Tx(section 9.9) | OPPO | revised |  | R4-2016999 |
| R4-2014799 | Further discussion on maintenance for RSTD measurement requirement | OPPO | noted |  |  |
| R4-2014800 | Revised WID on Band combinations for SA NR Supplementary uplink (SUL), NSA NR SUL, NSA NR SUL with UL sharing from the UE perspective (ULSUP) | Huawei, HiSilicon | endorsed |  |  |
| R4-2014801 | TR 37.717-00-00 v0.2.0 | Huawei, HiSilicon | agreed |  |  |
| R4-2014802 | CR on Introduction of completed SUL band combinations into TS 38.101-1 | Huawei, HiSilicon | agreed |  |  |
| R4-2014803 | CR on Introduction of completed SUL band combinations into TS 38.101-3 | Huawei, HiSilicon | agreed |  |  |
| R4-2014804 | Revised WID on NR inter-band CA for 5 bands DL with x bands UL (x=1, 2) | Huawei, HiSilicon | endorsed |  |  |
| R4-2014805 | TR 38.717-05-01 v0.2.0 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2014806 | CR on Introduction of completed 5 bands inter-band CA into TS 38.101-1 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2014807 | TP for TR 37.717-31-11: DC\_1A-3A-18A\_n28A | KDDI Corporation | approved |  |  |
| R4-2014808 | TP for TR 37.717-11-21: EN-DC\_1-3-18\_n28-n77 | KDDI Corporation | approved |  |  |
| R4-2014809 | TP for TR 37.717-11-21: EN-DC\_1-3-18\_n28-n78 | KDDI Corporation | approved |  |  |
| R4-2014810 | TP to TR 37.717-11-11: DC\_18A\_n41A | KDDI Corporation | revised |  | R4-2016663 |
| R4-2014811 | TP for DC\_3-18\_n28 | KDDI Corporation | approved |  |  |
| R4-2014812 | TP for TR 37.717-11-21: DC\_41A\_n28A-n41A | KDDI Corporation | revised |  | R4-2016720 |
| R4-2014813 | draft CR 38.101-3 to add DC\_n1-n257 and DC\_n79-n257 | NTT DOCOMO, INC. | endorsed |  |  |
| R4-2014814 | draft CR 38.101-3 to add DC\_n1-n77-n257, DC\_n1-n78-n257, DC\_n1-n79-n257, DC\_n77-n79-n257 and DC\_n78-n79-n257 | NTT DOCOMO, INC. | endorsed |  |  |
| R4-2014815 | draft CR 38.101-3 to add DC\_n1-n77-n79-n257 and DC\_n1-n78-n79-n257 | NTT DOCOMO, INC. | endorsed |  |  |
| R4-2014816 | TP for CA\_n1-n77-n79-n257 4DL/1UL for TR38.717-04-01 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014817 | TP for CA\_n1-n78-n79-n257 4DL/1UL for TR38.717-04-01 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014818 | TP for CA\_n1-n77-n79-n257 4DL/2UL for TR38.717-04-02 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014819 | TP for CA\_n1-n78-n79-n257 4DL/2UL for TR38.717-04-02 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014820 | CR for TS 38.141-2: Introduction of performance requirements of PUSCH repetition type A and PUSCH mapping type B for URLLC | NTT DOCOMO, INC. | revised |  | R4-2017517 |
| R4-2014821 | Views on NR BS performance for high-reliability and low-latency | NTT DOCOMO, INC. | noted |  |  |
| R4-2014822 | CR for TS 38.141-1: Updates of NR PUSCH performance requirements for Multi-path fading channel models under high Doppler values and applicability rules. | NTT DOCOMO, INC. | revised |  | R4-2017551 |
| R4-2014823 | Views on NR PUSCH for UL timing adjustment | NTT DOCOMO, INC. | noted |  |  |
| R4-2014824 | Discussion on remaining issues about CSI-RS based L3 measurement requirement | NTT DOCOMO, INC. | noted |  |  |
| R4-2014825 | TP for TR 37.717-11-21: DC\_1A-18A\_n28A-n41A | KDDI Corporation | approved |  |  |
| R4-2014826 | Proposals on FR2 FWA UE with maximum TRP of 23dBm | MediaTek Beijing Inc. | withdrawn |  |  |
| R4-2014827 | Analysis on practical TPMI and 2-port CSI-RS for EIRP measurement | MediaTek Beijing Inc. | noted |  |  |
| R4-2014828 | TP for TR 37.717-11-21: DC\_1A-18A\_n28A-n77A | KDDI Corporation | approved |  |  |
| R4-2014829 | Proposal of FR2 MIMO OTA simulation approach workplan | MediaTek Beijing Inc. | noted |  |  |
| R4-2014830 | TP for TR 37.717-11-21: DC\_1A-18A\_n28A-n78A | KDDI Corporation | approved |  |  |
| R4-2014831 | Draft CR to 38.101-3: Error correction of EN-DC configurations | Verizon Denmark | endorsed |  |  |
| R4-2014832 | Proposals on FR2 FWA UE with maximum TRP of 23dBm | MediaTek Beijing Inc. | noted |  |  |
| R4-2014833 | TP for TR 37.717-11-21: DC\_1A-18A\_n3A-n41A | KDDI Corporation | approved |  |  |
| R4-2014834 | Discussion on scenarios for FR2 high speed train | Verizon, Samsung | noted |  |  |
| R4-2014835 | Considerations on test cases for UE power saving RRM | vivo | noted |  |  |
| R4-2014836 | CR for test case for cell reselection to FR1 inter-RAT E-UTRA for not at cell edge criterion | vivo | revised |  | R4-2017139 |
| R4-2014837 | CR for simultaneous DCI based BWP switch delay on multiple CCs | vivo | postponed |  |  |
| R4-2014838 | CR for test cases for simultaneously DCI/timer based bwp switch over mulitple CCs | vivo | postponed |  |  |
| R4-2014839 | Discussion on test cases for BWP switch on multiple CCs | vivo | noted |  |  |
| R4-2014840 | TP for TR 37.717-11-21: DC\_1A-18A\_n41A-n77A | KDDI Corporation | approved |  |  |
| R4-2014841 | TP for TR 37.717-11-21: DC\_1A-18A\_n41A-n78A | KDDI Corporation | approved |  |  |
| R4-2014842 | DraftCR to 38.101-1: Introduce NR CA configurations for CA\_n2A-n48 and CA\_n48-n66A combinations | Verizon Denmark | endorsed |  |  |
| R4-2014843 | DraftCR to 38.101-3: Introduce inter-band CA and DC configurations including FR2 | Verizon Denmark | revised |  | R4-2016692 |
| R4-2014844 | DraftCR to 38.101-3: Introduce configurations for inter-band EN-DC including FR2 | Verizon Denmark | endorsed |  |  |
| R4-2014845 | TP for TR 37.717-31-11: DC\_1A-3A-18A\_n41A | KDDI Corporation | approved |  |  |
| R4-2014846 | Work plan for NR support for high speed train scenario in FR2 | Samsung, Nokia, Nokia Shanghai Bell | revised |  | R4-2016920 |
| R4-2014847 | Discussion on high speed train deployment scenario in FR2 | Samsung | noted |  |  |
| R4-2014848 | Discussion on UE RF requirement for FR2 HST | Samsung | noted |  |  |
| R4-2014849 | Further discussio on the Support of Transparent Tx Diversity in Rel-16 | Samsung | noted |  |  |
| R4-2014850 | TP for TR 38.717-11-11: DC\_48\_n77 | Verizon Denmark | withdrawn |  |  |
| R4-2014851 | TP for TR 37.717-11-21: EN-DC\_1-3-41\_n28-n41 | KDDI Corporation | revised |  | R4-2016721 |
| R4-2014852 | TP for TR 37.717-21-11: CA\_2-66\_n77 | Verizon Denmark | approved |  |  |
| R4-2014853 | TP for TR 37.717-11-21: DC\_1A-41A\_n28A-n41A | KDDI Corporation | revised |  | R4-2016722 |
| R4-2014854 | TP for TR 37.717-21-11: CA\_2-48\_n77 | Verizon Denmark | approved |  |  |
| R4-2014855 | TP for TR 37.717-11-21: DC\_3A-18A\_n28A-n41A | KDDI Corporation | approved |  |  |
| R4-2014856 | TP for TR 37.717-21-11: CA\_2-13\_n77 | Verizon Denmark | approved |  |  |
| R4-2014857 | TP for TR 37.717-21-11: CA\_2-5\_n77 | Verizon Denmark | approved |  |  |
| R4-2014858 | TP for TR 37.717-21-11: CA\_5-13\_n66 | Verizon Denmark | approved |  |  |
| R4-2014859 | TP for TR 37.717-11-21: DC\_3A-18A\_n28A-n77A | KDDI Corporation | approved |  |  |
| R4-2014860 | TP for TR 37.717-21-11: CA\_13-66\_n77 | Verizon Denmark | approved |  |  |
| R4-2014861 | Editorial CR for inter frequency measurements without measurement gaps (9.3.9) | Apple | endorsed |  |  |
| R4-2014862 | TP for TR 37.717-21-11: CA\_13-66\_n5 | Verizon Denmark | approved |  |  |
| R4-2014863 | TP for TR 37.717-11-21: DC\_3A-18A\_n28A-n78A | KDDI Corporation | approved |  |  |
| R4-2014864 | TP for TR 37.717-21-11: CA\_48-66\_n77 | Verizon Denmark | withdrawn |  |  |
| R4-2014865 | Correction on beamFailureInstanceMaxCount for test case of availability restriction during FR2 BFR in R15 | MediaTek inc. | revised |  | R4-2017049 |
| R4-2014866 | Correction on beamFailureInstanceMaxCount for test cases of availability restriction during FR2 BFR in R16 | MediaTek inc. | agreed |  |  |
| R4-2014867 | Discussion on clarification for NR-U RRM requirements with DRX in use | MediaTek inc. | noted |  |  |
| R4-2014868 | Clarification for NR-U RRM requirements with DRX in use | MediaTek inc. | not pursued |  |  |
| R4-2014869 | Discussion on measurement requirements for NR-U | MediaTek inc. | noted |  |  |
| R4-2014870 | CR on intra-frequency and inter-frequency measurement with CCA and RSSI measurements | MediaTek inc. | postponed |  |  |
| R4-2014871 | Discussion on general test setting for NR-U test cases | MediaTek inc. | noted |  |  |
| R4-2014872 | Discussion on RRM test cases in NR-U | MediaTek inc. | noted |  |  |
| R4-2014873 | Discussion on Inter-band CA requirement for FR2 | MediaTek inc. | noted |  |  |
| R4-2014874 | Correction on unknown SCell activation in FR2. | MediaTek inc. | revised |  | R4-2017205 |
| R4-2014875 | Discussion on RRM requirements in NTN | MediaTek inc. | noted |  |  |
| R4-2014876 | TP for TR 37.717-02-01: CA\_n5-n48 | Verizon Denmark | revised |  | R4-2016684 |
| R4-2014877 | TP for TR 37.717-11-11 for DC\_2\_n261 | Verizon Denmark | approved |  |  |
| R4-2014878 | TP for TR 37.717-11-21: DC\_3A-18A\_n3A-n41A | KDDI Corporation | revised |  | R4-2016723 |
| R4-2014879 | TP for TR 37.717-11-21: DC\_3A-18A\_n41A-n77A | KDDI Corporation | approved |  |  |
| R4-2014880 | Discussion on the applicability of DFT-S-OFDM for NTN | CAICT | noted |  |  |
| R4-2014881 | TP for TR 37.717-11-21: DC\_3A-18A\_n41A-n78A | KDDI Corporation | approved |  |  |
| R4-2014882 | TP for TR 37.717-11-21: DC\_3A-41A\_n28A-n41A | KDDI Corporation | revised |  | R4-2016724 |
| R4-2014883 | Clarification on RF assumption for B42\_n77 and B42\_n78 | NTT DOCOMO INC. | noted |  |  |
| R4-2014884 | TP for TR 37.717-11-21: DC\_3A\_n28A-n41A | KDDI Corporation | revised |  | R4-2016725 |
| R4-2014885 | CR for introduction of EESS protection applied after 2021 | NTT DOCOMO INC. | not pursued |  |  |
| R4-2014886 | CR for introduction of EESS protection applied after 2021 | NTT DOCOMO INC. | withdrawn |  |  |
| R4-2014887 | NR-U 60kHz SCS | Apple Inc. | noted |  |  |
| R4-2014888 | NR-U wideband capabilities | Apple Inc. | noted |  |  |
| R4-2014889 | NR-U CA bandwidth classes | Apple Inc. | noted |  |  |
| R4-2014890 | LTE/NR spectrum sharing in band 48/n48 frequency range | Apple Inc., Comcast | noted |  |  |
| R4-2014891 | Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range | Apple Inc. | not pursued |  |  |
| R4-2014892 | Further considerations on the numerology and channel bandwidth sizes for the 60GHz frequency range | Apple Inc. | noted |  |  |
| R4-2014893 | Futher considerations on the phase noise for the 60GHz frequency range | Apple Inc. | noted |  |  |
| R4-2014894 | Regulatory overview and input for the 60GHz frequency range | Apple Inc. | noted |  |  |
| R4-2014895 | Non-standard spectrum allocations for NR bands | Apple Inc. | noted |  |  |
| R4-2014896 | Coexistence cleanup for 36101 Rel15 | Apple Inc. | agreed |  |  |
| R4-2014897 | Coexistence cleanup for 36101 Rel16 | Apple Inc. | agreed |  |  |
| R4-2014898 | Coexistence cleanup for 38.101-1 Rel15 | Apple Inc. | agreed |  |  |
| R4-2014899 | Coexistence cleanup for 38.101-1 Rel16 | Apple Inc. | agreed |  |  |
| R4-2014900 | Coexistence cleanup for 38.101-3 Rel15 | Apple Inc. | not pursued |  |  |
| R4-2014901 | Coexistence cleanup for 38.101-3 Rel16 | Apple Inc. | not pursued |  |  |
| R4-2014902 | A-MPR Proposal for n13 | Apple Inc. | noted |  |  |
| R4-2014903 | PC5 NR-U MPR for NS\_53 and NS\_54 | Apple Inc. | noted |  |  |
| R4-2014904 | On Tx diversity | Apple Inc. | noted |  |  |
| R4-2014905 | CR for TS 38.101-1: Correction to FR1 time mask for SRS antenna switching | Apple Inc. | not pursued |  |  |
| R4-2014906 | CR for TS 38.101-1: Correction to FR1 time mask for SRS antenna switching | Apple Inc. | withdrawn |  |  |
| R4-2014907 | CR for TS 38.101-2: Clarification for NS\_202 emission requirements | Apple Inc. | agreed |  |  |
| R4-2014908 | CR for TS 38.101-2: Clarification for NS\_202 | Apple Inc. | agreed |  |  |
| R4-2014909 | FR1 intra-band UL NCCA frequency separation and power class | Apple Inc. | noted |  |  |
| R4-2014910 | DC location for intra-band UL CA | Apple Inc. | noted |  |  |
| R4-2014911 | UE RF requirments tables with channel BW dependency | Apple Inc. | noted |  |  |
| R4-2014912 | More on FR2 Inter-band DL CA | Apple Inc. | noted |  |  |
| R4-2014913 | Views on FR2 Inter-band UL CA | Apple Inc. | noted |  |  |
| R4-2014914 | CR for TS 38.101-3: Corrections for intra-band contiguous EN-DC configurations | Apple Inc. | not pursued |  |  |
| R4-2014915 | CR for TS 38.101-3: Corrections for intra-band contiguous EN-DC configurations | Apple Inc. | not pursued |  |  |
| R4-2014916 | CR for TS 38.101-1: NR-U UE RF open requirements | Apple Inc. | not pursued |  |  |
| R4-2014917 | LS response on simultaneous Rx/Tx for inter-band NR-DC | Apple Inc. | noted |  |  |
| R4-2014918 | Updated work plan for FS\_FR2\_enhTestMethods | Apple Inc., vivo | approved |  |  |
| R4-2014919 | TP to TR38.884 on High DL and Low UL power test cases | Apple Inc. | revised |  | R4-2017598 |
| R4-2014920 | Views on polarization mismatch | Apple Inc. | noted |  |  |
| R4-2014921 | Impact of AoA offset on inter-band CA PSD difference | Apple Inc. | noted |  |  |
| R4-2014922 | Band n262 testability | Apple Inc. | noted |  |  |
| R4-2014923 | Remaining issues with beam correspondence enhancement | Apple Inc. | noted |  |  |
| R4-2014924 | CR to TR 38.831 on beam correspondence corrections | Apple Inc. | revised |  | R4-2016822 |
| R4-2014925 | Further consideration on EESS protection | NTT DOCOMO INC. | withdrawn |  |  |
| R4-2014926 | Further consideration on EESS protection | NTT DOCOMO INC. | noted |  |  |
| R4-2014927 | TP for TR 37.717-11-21: DC\_18A\_n28A-n41A | KDDI Corporation | approved |  |  |
| R4-2014928 | Satellite Position Accuracy | Eutelsat S.A. | noted |  |  |
| R4-2014929 | TP for TR 37.717-11-21: DC\_18A\_n28A-n77A | KDDI Corporation | approved |  |  |
| R4-2014930 | TP for TR 37.717-11-21: DC\_18A\_n28A-n78A | KDDI Corporation | approved |  |  |
| R4-2014931 | TP for TR 37.717-11-21: DC\_18A\_n3A-n41A | KDDI Corporation | revised |  | R4-2016726 |
| R4-2014932 | CR for PSD imbalance for FR2 DL inter-band CA | NTT DOCOMO INC. | not pursued |  |  |
| R4-2014933 | Big CR on 2-step RA type RRM performance requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2017253 |
| R4-2014934 | 2-step RACH RRM performance requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014935 | CR Maintenance 2-step RACH RRM requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2017255 |
| R4-2014936 | Draft CR on 2-step RA type CBRA in FR2 for NR Standalone | Nokia, Nokia Shanghai Bell | revised |  | R4-2017257 |
| R4-2014937 | 2-step RACH BS demodulation performance requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014938 | 2-step RACH BS demodulation simulation results | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014939 | Introduction of 2-step RACH FRC tables in 38.141-1 | Nokia, Nokia Shanghai Bell | revised |  | R4-2017637 |
| R4-2014940 | General Demodulation performance requirements for NR-U | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014941 | PUSCH Demodulation performance requirements for operation in unlicensed bands | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014942 | PUCCH Demodulation performance requirements for operation in unlicensed bands | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014943 | PRACH Demodulation performance requirements for operation in unlicensed bands | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014944 | Correction of eLAA FRC table | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014945 | Correction of eLAA FRC table | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014946 | Correction of eLAA FRC table | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014947 | Correction of RRM tests | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014948 | Correction of RRM tests | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2014949 | On PMI reporting requirements for enhanced Type II codebooks | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2014950 | TP for TR 37.717-11-21: DC\_18A\_n41A-n77A | KDDI Corporation | approved |  |  |
| R4-2014951 | TP for TR 37.717-11-21: DC\_18A\_n41A-n78A | KDDI Corporation | approved |  |  |
| R4-2014952 | TP for DC\_1-18\_n28 | KDDI Corporation | revised |  | R4-2016664 |
| R4-2014953 | TP for DC\_1-18\_n41 | KDDI Corporation | revised |  | R4-2016665 |
| R4-2014954 | Discussion on NR-U CA bandwidth classes | ZTE Corporation | noted |  |  |
| R4-2014955 | CR to TS 38.101-1 on NR CA bandwidth classes for unlicensed spectrum (Rel-16) | ZTE Corporation | revised |  | R4-2016798 |
| R4-2014956 | CR to TS 38.101-1 on operating bands for intra-band CA (Rel-16) | ZTE Corporation | not pursued |  |  |
| R4-2014957 | CR to TS 38.101-2 on fallback group for intra-band contiguous CA (Rel-16) | ZTE Corporation | revised |  | R4-2016837 |
| R4-2014958 | CR to TS 38.101-3 on intra-band contiguous EN-DC BW class (Rel-16) | ZTE Corporation | agreed |  |  |
| R4-2014959 | Further considerations on simplification of band combination | ZTE Corporation | noted |  |  |
| R4-2014960 | CR to TS 38.101-1 on simplification for inter-band CA configuration | ZTE Corporation | revised |  | R4-2016937 |
| R4-2014961 | CR to TS 38.101-2 on simplification for inter-band CA configuration | ZTE Corporation | revised |  | R4-2016938 |
| R4-2014962 | CR to TS 38.101-3 on simplification for inter-band CA configuration between FR1 and FR2 | ZTE Corporation | revised |  | R4-2016939 |
| R4-2014963 | Discussion on UL gap for self-calibration and monitoring | vivo | noted |  |  |
| R4-2014964 | CR on IDLE state cell re-selection requirements for HST in 38.133 | vivo,Huawei, HiSilicon | revised |  | R4-2017240 |
| R4-2014965 | CR on IDLE state cell-reselection requirements for HST in 36.133 | vivo,Huawei, HiSilicon | withdrawn |  |  |
| R4-2014966 | DL Inter-band CA\_n257-n259 | NTT DOCOMO INC. | noted |  |  |
| R4-2014967 | Skeleton on TR 37.717-51-11\_0.0.1 | Samsung | agreed |  |  |
| R4-2014968 | TR 37.717-51-11\_0.1.0 | Samsung | agreed |  |  |
| R4-2014969 | Skeleton on TR 37.717-21-22\_0.0.1 | Samsung | agreed |  |  |
| R4-2014970 | TR 37.717-21-22\_0.1.0 | Samsung | agreed |  |  |
| R4-2014971 | Further discussion on switching period for NR V2X | vivo | noted |  |  |
| R4-2014972 | CR on TS38.101-1 for NR V2X | vivo | agreed |  |  |
| R4-2014973 | General views on NR sidelink enhancements in R17 | vivo | noted |  |  |
| R4-2014974 | Further discussion on channel bandwidths and numerology for B52.6G | vivo | noted |  |  |
| R4-2014975 | Further discussion on PA model for B52.6G | vivo | noted |  |  |
| R4-2014976 | TP to TR 38.808: On 52.6 to 71 GHz phase noise characteristics, TP to TR and draft LS to RAN1 | Ericsson | noted |  |  |
| R4-2014977 | TP to TR 38.808: Addition of technical background information for base station in clause 2 and sub-clause 4.2.6 | Ericsson | noted |  |  |
| R4-2014978 | On AAS base station array antenna model and spatial selectivity | Ericsson | noted |  |  |
| R4-2014979 | TP to TR 38.921: Correction to antenna parameter table in clause 3 and sub-clause 8.1 | Ericsson | revised |  | R4-2016902 |
| R4-2014980 | TP to TR 38.808: Addition of general RAN4 structure to sub-clause 4.2 | Ericsson | noted |  |  |
| R4-2014981 | CR on IDLE state cell re-selection requirements for HST in 36.133 | vivo, Huawei, HiSilicon | revised |  | R4-2017241 |
| R4-2014982 | TP for DC\_3-42\_n1 for TR 37.717-21-11 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014983 | TP for DC\_19\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014984 | TP for DC\_21\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014985 | TP for DC\_21\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014986 | TP for DC\_21\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014987 | TP for DC\_42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2014988 | TP for DC\_42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2014989 | TP for DC\_3-19\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014990 | TP for DC\_3-19\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014991 | TP for DC\_3-19\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014992 | TP for DC\_3-21\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014993 | TP for DC\_3-21\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014994 | TP for DC\_3-21\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014995 | TP for DC\_3-42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2014996 | TP for DC\_3-42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2014997 | TP for DC\_3-42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2014998 | TP for DC\_19-21\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  |  |
| R4-2014999 | TP for DC\_19-21\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  |  |
| R4-2015000 | TP for DC\_19-21\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  |  |
| R4-2015001 | TP for DC\_19-42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015002 | TP for DC\_19-42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015003 | TP for DC\_19-42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015004 | TP for DC\_21-42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015005 | TP for DC\_21-42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015006 | TP for DC\_21-42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015007 | TP for DC\_3-19-42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015008 | TP for DC\_3-19-42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015009 | TP for DC\_3-19-42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015010 | TP for DC\_3-21-42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015011 | TP for DC\_3-21-42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015012 | TP for DC\_3-21-42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015013 | TP for DC\_19-21-42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015014 | TP for DC\_19-21-42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015015 | TP for DC\_19-21-42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015016 | CR to TS 38.101-1[R15]: Clarification of non-simultaneous Rx/Tx operation for CA\_n77-n79 and CA\_n78-n79 in TS 38.101-1. | NTT DOCOMO, INC. | revised |  | R4-2016789 |
| R4-2015017 | CR to TS 38.101-1[R16]: Clarification of non-simultaneous Rx/Tx operation for CA\_n77-n79 and CA\_n78-n79 in TS 38.101-1. | NTT DOCOMO, INC. | agreed |  |  |
| R4-2015018 | Architecture and REFSENS discussion for NR-U 6GHz | MediaTek Inc. | noted |  |  |
| R4-2015019 | Propagation Condition for FR2 DL 256QAM | ZTE Corporation | noted |  |  |
| R4-2015020 | UE demodulation requirements for DPS transmission scheme | ZTE Corporation | noted |  |  |
| R4-2015021 | CR to demodulation performance requirements | ZTE Corporation | revised |  | R4-2017537 |
| R4-2015022 | Introduction of test procedure and requirement for 2-step RACH | Ericsson | not pursued |  | - |
| R4-2015023 | FRCs for URLLC | Ericsson | revised |  | R4-2017518 |
| R4-2015024 | Test requirements for 0.001% BLER | Ericsson | revised |  | R4-2017501 |
| R4-2015025 | Introduction of URLLC 0.001% BLER requirement | Ericsson | revised |  | R4-2017502 |
| R4-2015026 | CR to TS 38.175: IAB definition | ZTE Corporation | agreed |  |  |
| R4-2015027 | CR to TS 38.175: Radiated emission, IAB | ZTE Corporation | revised |  | R4-2017442 |
| R4-2015028 | Discussion on the performance requirements of IAB EMC | ZTE Corporation | noted |  |  |
| R4-2015029 | CR to TS 38.101-1: Correction on applicability of 4Rx requirements for CA | ZTE Corporation | not pursued |  |  |
| R4-2015030 | CR to TS 38.101-1: Correction on applicability of 4Rx requirements for CA | ZTE Corporation | withdrawn |  |  |
| R4-2015031 | CR to TS 38.101-1: Correction on the Aggregated Channel Bandwidth | ZTE Corporation | not pursued |  |  |
| R4-2015032 | CR to TS 38.101-1: Correction on the Aggregated Channel Bandwidth | ZTE Corporation | withdrawn |  |  |
| R4-2015033 | CR to TS38.101-1: Correction on the general requirement and configured transmitted power requirement for inter-band DC | ZTE Corporation | not pursued |  |  |
| R4-2015034 | CR to TS 38.101-3: Some corrections on the ENDC | ZTE Corporation | revised |  | R4-2016991 |
| R4-2015035 | CR to TS 38.101-3: Some corrections on the ENDC | ZTE Corporation | agreed |  |  |
| R4-2015036 | CR to TS 38.307 on the definition of the duplex-mode for the band configurations | ZTE Corporation, CHTTL | not pursued |  |  |
| R4-2015037 | CR to TS 38.307 on the definition of the duplex-mode for the band configurations | ZTE Corporation, CHTTL | not pursued |  |  |
| R4-2015038 | Discussion on PC2 intra-band contiguous NR CA | ZTE Corporation | noted |  |  |
| R4-2015039 | On MSD for PC2 n41-n79 NR inter-band CA | ZTE Corporation | noted |  |  |
| R4-2015040 | Discussion on SAR solution for NR PC2 inter-band CA | ZTE Corporation | noted |  |  |
| R4-2015041 | Discussion on SAR solution for NR PC2 SUL | ZTE Corporation | noted |  |  |
| R4-2015042 | Discussion on the MSD of the new channel BW for EN-DC and NR CA band combinations | ZTE Corporation | noted |  |  |
| R4-2015043 | Further discussion on spectrum utilization for 35MHz and 45MHz | ZTE Corporation | noted |  |  |
| R4-2015044 | On UE RF requirement for new channel bandwidth of 35MHz and 45MHz | ZTE Corporation | noted |  |  |
| R4-2015045 | Draft CR to TS38.101-1: Add missing OOB blocking exception combination | ZTE Corporation | endorsed |  |  |
| R4-2015046 | TP for TR38.717-02-01\_ CA\_n34A-n79A | ZTE Corporation | approved |  |  |
| R4-2015047 | TP for 37.717-11-21\_ DC\_40\_n41-n258 | ZTE Corporation | approved |  |  |
| R4-2015048 | TP for 37.717-11-21\_ DC\_40\_n79-n258 | ZTE Corporation | approved |  |  |
| R4-2015049 | TP for 37.717-11-21\_ DC\_41\_n79-n258 | ZTE Corporation | approved |  |  |
| R4-2015050 | TP for 37.717-11-31\_ DC\_8A\_n40A-n41A-n79A | ZTE Corporation | approved |  |  |
| R4-2015051 | TP for TR38.717-03-01\_ CA\_n8A-n40A-n41A | ZTE Corporation | approved |  |  |
| R4-2015052 | TP for TR38.717-03-02\_ CA\_n8A-n40A-n41A | ZTE Corporation | approved |  |  |
| R4-2015053 | TP for TR38.xxx\_ PC2 CA\_n3A-n41A | ZTE Corporation, CMCC | revised |  | R4-2016855 |
| R4-2015054 | TP for TR38.xxx\_ PC2 CA\_n28A-n41A | ZTE Corporation, CMCC | approved |  |  |
| R4-2015055 | TP for TR38.xxx\_ PC2 CA\_n28A-n79A | ZTE Corporation, CMCC | approved |  |  |
| R4-2015056 | TP for TR38.xxx\_ PC2 CA\_n40A-n41A | ZTE Corporation, CMCC | approved |  |  |
| R4-2015057 | Revised WID on Rel-17 NR Inter-band CA\_DC xUL\_2DL (x=1,2) | ZTE Corporation | endorsed |  |  |
| R4-2015058 | Draft CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-1 | ZTE Corporation | withdrawn |  |  |
| R4-2015059 | Draft CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-3 | ZTE Corporation | withdrawn |  |  |
| R4-2015060 | Revised WID on Rel-17 NR Inter-band Carrier AggregationDual Connectivity for 3 bands DL with 2 bands UL | ZTE Corporation | endorsed |  |  |
| R4-2015061 | Draft CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-1 | ZTE Corporation | withdrawn |  |  |
| R4-2015062 | Draft CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-3 | ZTE Corporation | withdrawn |  |  |
| R4-2015063 | Revised WID on Rel-17 Dual Connectivity (DC) x bands (x=1,2) LTE inter-band CA (xDL/xUL) and y bands (y=3-x) NR inter-band CA | ZTE Corporation | endorsed |  |  |
| R4-2015064 | Draft CR to reflect the completed DC combinations for 3 bands DL with 3 bands UL into TS 38.101-3 | ZTE Corporation | withdrawn |  |  |
| R4-2015065 | TR 37.717-33 v0.2.0 | ZTE Corporation | withdrawn |  |  |
| R4-2015066 | Revised WID on Rel-17 Dual Connectivity (DC) of x bands (x=1,2,3) LTE inter-band CA (xDL1UL) and 3 bands NR inter-band CA (3DL1UL) | ZTE Corporation | endorsed |  |  |
| R4-2015067 | TR 37.717-11-31\_v0.2.0 | ZTE Corporation | agreed |  |  |
| R4-2015068 | MSD evaluation for CA 3DL2UL n1-n77-n79 for TR 38.717-03-02 | MediaTek Inc. | noted |  |  |
| R4-2015069 | MSD for CA\_n71(2A) | MediaTek Inc. | revised |  | R4-2016666 |
| R4-2015070 | Introduction of LTE inter-band Carrier Aggregation for x bands DL (x=4, 5) with 1 band UL to TS36.101 | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2015071 | draftCR for DC\_1A-1A\_n28A and DC\_1A-1A\_n78A | Nokia, Nokia Shanghai Bell | endorsed |  |  |
| R4-2015072 | draftCR for DC\_1A-1A-3A\_n28A, DC\_1A-1A-3C\_n28A, DC\_1A-1A-3A\_n78A, DC\_1A-1A-3C\_n78A, DC\_1A-1A-5A\_n78A, DC\_1A-1A-7A\_n28A, DC\_1A-1A-28A\_n78A, and DC\_3C-5A\_n78A | Nokia, Nokia Shanghai Bell | endorsed |  |  |
| R4-2015073 | draftCR for DC\_1A-3C-5A\_n78A, DC\_1A-1A-3A-5A\_n78A, DC\_1A-1A-3C-5A\_n78A, DC\_1A-1A-3A-7A\_n78A, DC\_1A-1A-3C-7A\_n78A, DC\_1A-1A-3C-7A\_n28A, DC\_1A-1A-3A-28A\_n78A, DC\_1A-1A-3C-28A\_n78A and DC\_3C-5A-7A\_n78A | Nokia, Nokia Shanghai Bell | endorsed |  |  |
| R4-2015074 | draft CR for DC\_1A-1A-3A-5A-7A\_n78A, DC\_1A-3C-5A-7A\_n78A, and DC\_1A-1A-3A-7A-28A\_n78A | Nokia, Nokia Shanghai Bell | endorsed |  |  |
| R4-2015075 | draftCR for CA\_n66(2A)-n77A, CA\_n66A-n77(2A) and CA\_n66(2A)-n77(2A) BCS1 | Nokia, Nokia Shanghai Bell | revised |  | R4-2016685 |
| R4-2015076 | TP to TR 38.717-02-01: CA\_n5-n25 | Nokia, Nokia Shanghai Bell | revised |  | R4-2016686 |
| R4-2015077 | TP to TR 38.717-02-01: CA\_n25-n77 | Nokia, Nokia Shanghai Bell | revised |  | R4-2016687 |
| R4-2015078 | TP to TR 38.717-03-01: CA\_n5-n66-n77 | Nokia, Nokia Shanghai Bell | approved |  |  |
| R4-2015079 | TP to TR 38.717-03-01: CA\_n2-n66-n77 | Nokia, Nokia Shanghai Bell | approved |  |  |
| R4-2015080 | TP to TR 38.717-03-02: CA\_n5-n66-n77 | Nokia, Nokia Shanghai Bell | approved |  |  |
| R4-2015081 | TP to TR 38.717-03-02: CA\_n2-n66-n77 | Nokia, Nokia Shanghai Bell | approved |  |  |
| R4-2015082 | TP to TR 38.717-02-01 to correct CA\_n7(2A)-n66 BCS | Nokia, Nokia Shanghai Bell | approved |  |  |
| R4-2015083 | TP to TR 38.847 on regulatory background and system parameters | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015084 | UE RF requirements for NR band n262 | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015085 | Open issues on FR2 FWA UE RF requirement | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015086 | n48 DSS operation with 100 kHz channel raster shift | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015087 | Power Class 4 for HST | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015088 | CR to TR 38.831 to include DL CA agreement | Nokia, Nokia Shanghai Bell | revised |  | R4-2016827 |
| R4-2015089 | Clarification of intra-bandENDC-Support | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015090 | On NR Rel-16 HST BS demodulation PUSCH requirements and simulation results | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015091 | CR for 38.104: HST PUSCH demodulation requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2017552 |
| R4-2015092 | On NR Rel-16 HST BS demodulation PRACH simulation results | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015093 | On NR Rel-16 HST BS demodulation UL timing adjustment requirements and simulation results | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015094 | On NR Rel-16 BS demodulation performance requirements with ultra-low BLER | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015095 | On NR Rel-16 BS demodulation performance requirements with higher BLER and simulation results | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015096 | CR for 38.104: Ultra high reliability BS demodulation requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2017503 |
| R4-2015097 | CR for 38.104: Low latency BS demodulation requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2017524 |
| R4-2015098 | CR for 38.141-1: URLLC testing methodology appendix | Nokia, Nokia Shanghai Bell, Intel, Ericsson, Huawei, HiSilicon | revised |  | R4-2017504 |
| R4-2015099 | CR for 38.141-2: URLLC testing methodology appendix | Nokia, Nokia Shanghai Bell, Intel, Ericsson, Huawei, HiSilicon | revised |  | R4-2017505 |
| R4-2015100 | CR to TS 37.113 on Voltage dips and interruptions, Release 15 | Ericsson | revised |  | R4-2017435 |
| R4-2015101 | CR to TS 37.113 on Voltage dips and interruptions, Release 16 | Ericsson | revised |  | R4-2017436 |
| R4-2015102 | CR to TS 38.113 on Voltage dips and interruptions, Release 15 | Ericsson | revised |  | R4-2017437 |
| R4-2015103 | CR to TS 38.113 on Voltage dips and interruptions, Release 16 | Ericsson | revised |  | R4-2017438 |
| R4-2015104 | CR to TS 38.113 on Performance criteria for transient phenomena, Release 15 | Ericsson | revised |  | R4-2017439 |
| R4-2015105 | CR to TS 38.113 on Performance criteria for transient phenomena, Release 16 | Ericsson | not pursued |  | - |
| R4-2015106 | CR to TS 38.175 on Voltage dips and interruptions, Release 16 | Ericsson | revised |  | R4-2017444 |
| R4-2015107 | Definition of Exclusion Bands for IAB EMC nodes | Ericsson | noted |  |  |
| R4-2015108 | CR to TS 38.175 on Exclusion Bands | Ericsson | not pursued |  |  |
| R4-2015109 | Discussion on IAB EMC Radiated Emissions | Ericsson | noted |  |  |
| R4-2015110 | CR to TS 38.175 on IAB EMC Emission | Ericsson | merged |  |  |
| R4-2015111 | Discussion on Spatial Exclusion for IAB EMC RI test | Ericsson | noted |  |  |
| R4-2015112 | CR to TS 38.175 on Spatial Exclusion for IAB EMC Radiated Immunity test | Ericsson | revised |  | R4-2017443 |
| R4-2015113 | Discussion on IAB EMC performance requirements | Ericsson | noted |  |  |
| R4-2015114 | CR to TS 38.175 on IAB EMC performance requirements | Ericsson | revised |  | R4-2017446 |
| R4-2015115 | Discssion on EMC Test Simplification for Rel-17 EMC enhancement | Ericsson | not treated |  |  |
| R4-2015116 | New WID proposal on RAN4 Rel-17 EMC enhancement | Ericsson, ZTE | not treated |  |  |
| R4-2015117 | View on BS demodulation requirement for NR-U | Samsung | noted |  |  |
| R4-2015118 | Simulation results for NR HST PUSCH | Samsung | noted |  |  |
| R4-2015119 | Discussion and simulation results for NR HST UL timing adjustment | Samsung | noted |  |  |
| R4-2015120 | Simulation results for NR HST PRACH | Samsung | noted |  |  |
| R4-2015121 | CR on UL timing adjustment conducted performance requirement for TS 38.141-1 | Samsung | revised |  | R4-2017559 |
| R4-2015122 | Discussion and simulation results for BS URLLC requirement | Samsung | noted |  |  |
| R4-2015123 | Draft CR on PUSCH repetition type A and PUSCH mapping type B radiated performance requirement for TS 38.104 | Samsung | revised |  | R4-2017519 |
| R4-2015124 | Draft CR on FRC for URLLC BS radiated performance requirement for TS 38.141-2 | Samsung | revised |  | R4-2017520 |
| R4-2015125 | Discussion and simulation results for BS 2-step RACH requirement | Samsung | noted |  |  |
| R4-2015126 | Draft CR on MsgA PUSCH radiated performance requirement for TS 38.141-2 | Samsung | not pursued |  | - |
| R4-2015127 | Discussion on performance requirements for PDCCH-WUS | MediaTek inc. | noted |  |  |
| R4-2015128 | Simulation results on PDSCH performance requirements for multi-DCI based multi-TRP transmission | MediaTek inc. | noted |  |  |
| R4-2015129 | Discussion on eMBB UE performance requirement with pre-emption | MediaTek inc. | noted |  |  |
| R4-2015130 | Discussion on UE performance requirement for NR-U | MediaTek inc. | noted |  |  |
| R4-2015131 | Draft CR for 38.101-3 to add n78C in DC\_n78-n257 | SK Telecom, Samsung, Ericsson, Nokia, LGE | not pursued |  | - |
| R4-2015132 | Draft CR for 38.101-3 to add UL EN-DC configurations for DC\_5\_n257, DC\_7\_n257 and DC\_7-7\_n257 | SK Telecom, Samsung, Ericsson, Nokia, LGE | endorsed |  |  |
| R4-2015133 | Draft CR for 38.101-3 to add UL EN-DC configurations including FR2 with 3DL and 2UL | SK Telecom, Samsung, Ericsson, Nokia, LGE | endorsed |  |  |
| R4-2015134 | Draft CR for 38.101-3 to add EN-DC configurations including FR2 with 4DL and 2UL | SK Telecom, Samsung, Ericsson, Nokia, LGE | endorsed |  |  |
| R4-2015135 | Draft CR for 38.101-3 to add UL EN-DC configurations including FR2 with 5DL and 2UL | SK Telecom, Samsung, Ericsson, Nokia, LGE | endorsed |  |  |
| R4-2015136 | TP for TR 37.717-21-22: DC\_1-3\_n78-n257 | SK Telecom, Samsung | approved |  |  |
| R4-2015137 | TP for TR 37.717-21-22: DC\_1-5\_n78-n257 | SK Telecom, Samsung | approved |  |  |
| R4-2015138 | TP for TR 37.717-21-22: DC\_1-7\_n78-n257 and DC\_1-7-7\_n78-n257 | SK Telecom, Samsung | approved |  |  |
| R4-2015139 | TP for TR 37.717-21-22: DC\_3-5\_n78-n257 | SK Telecom, Samsung | approved |  |  |
| R4-2015140 | TP for TR 37.717-21-22: DC\_3-7\_n78-n257 and DC\_3-7-7\_n78-n257 | SK Telecom, Samsung | approved |  |  |
| R4-2015141 | TP for TR 37.717-21-22: DC\_5-7\_n78-n257 and DC\_5-7-7\_n78-n257 | SK Telecom, Samsung | approved |  |  |
| R4-2015142 | TP for TR 37.717-21-22: DC\_1-3-5\_n78-n257 | SK Telecom, Samsung | approved |  |  |
| R4-2015143 | TP for TR 37.717-21-22: DC\_1-3-7\_n78-n257 and DC\_1-3-7-7\_n78-n257 | SK Telecom, Samsung | approved |  |  |
| R4-2015144 | TP for TR 37.717-21-22: DC\_1-5-7\_n78-n257 and DC\_1-5-7-7\_n78-n257 | SK Telecom, Samsung | approved |  |  |
| R4-2015145 | TP for TR 37.717-21-22: DC\_3-5-7\_n78-n257 and DC\_3-5-7-7\_n78-n257 | SK Telecom, Samsung | approved |  |  |
| R4-2015146 | TP for TR 37.717-21-22: DC\_1-3-5-7\_n78-n257 and DC\_1-3-5-7-7\_n78-n257 | SK Telecom, Samsung | approved |  |  |
| R4-2015147 | Test cases for NR -NR cell identification in connected mode for high speed | Ericsson | revised |  | R4-2017249 |
| R4-2015148 | Correction of beam assumptions in interfrequency EN-DC FR1+FR2 tests | Ericsson | merged |  |  |
| R4-2015149 | Correction of beam assumptions in interfrequency EN-DC FR1+FR2 tests | Ericsson | withdrawn |  |  |
| R4-2015150 | Correction of TBD values in EN-DC PSCell addition and release delay test | Ericsson | postponed |  | - |
| R4-2015151 | Correction of TBD values in EN-DC PSCell addition and release delay test | Ericsson | withdrawn |  |  |
| R4-2015152 | Correction to types of requirements in annex A | Ericsson | agreed |  |  |
| R4-2015153 | Correction to types of requirements in annex A | Ericsson | agreed |  |  |
| R4-2015154 | Corrections to frequency range in interfrequency measurement procedures tests | Ericsson | revised |  | R4-2017051 |
| R4-2015155 | Corrections to frequency range in interfrequency measurement procedures tests | Ericsson | agreed |  |  |
| R4-2015156 | Correction to high speed idle mode core requirement | Ericsson | not pursued |  |  |
| R4-2015157 | Correction on TBD values in FR1+FR2 interfrequency RSRP accuracy tests | Ericsson | agreed |  |  |
| R4-2015158 | Correction on TBD values in FR1+FR2 interfrequency RSRP accuracy tests | Ericsson | agreed |  |  |
| R4-2015159 | Addition of symbol definitions | Ericsson | agreed |  |  |
| R4-2015160 | Addition of symbol definitions | Ericsson | agreed |  |  |
| R4-2015161 | Correction of TBD value in Radio Link Monitoring Out-of-sync Tests for FR2 configured with CSI-RS-based RLM | Ericsson | merged |  |  |
| R4-2015162 | Correction of TBD value in Radio Link Monitoring Out-of-sync Tests for FR2 configured with CSI-RS-based RLM | Ericsson | withdrawn |  |  |
| R4-2015163 | Square bracket removal in 38.133 section A.1 to A.5 | Ericsson | revised |  | R4-2017052 |
| R4-2015164 | Square bracket removal in 38.133 section A.1 to A.5 | Ericsson | agreed |  |  |
| R4-2015165 | Square bracket removal in 38.133 section A.6 to A.8 | Ericsson | revised |  | R4-2017163 |
| R4-2015166 | Square bracket removal in 38.133 section A.6 to A.8 | Ericsson | agreed |  |  |
| R4-2015167 | AGC operation in async intra-frequency DAPS HO | Ericsson | noted |  |  |
| R4-2015168 | Corrections to DAPS requirements | Ericsson | postponed |  | - |
| R4-2015169 | Conditional handover test cases for NR | Ericsson | revised |  | R4-2017097 |
| R4-2015170 | Updates to general section for NR-U in 38.133 | Ericsson | agreed |  |  |
| R4-2015171 | Test case list and configurations for CGI reading | Ericsson | noted |  |  |
| R4-2015172 | CR to introduce interfrequency FR2 CGI reading test for SA NR (TC2) | Ericsson | revised |  | R4-2017195 |
| R4-2015173 | Test case list for FR2 inter-band carrier aggregation | Ericsson | noted |  |  |
| R4-2015174 | Test case list for mandatory measurement gap | Ericsson | noted |  |  |
| R4-2015175 | Test cases for mandatory measurement gap | Ericsson | revised |  | R4-2017339 |
| R4-2015176 | CR to TS 38.307 Release independence support of new channel bandwidth from Rel-15 | ZTE Wistron Telecom AB | agreed |  |  |
| R4-2015177 | Draft CR to TS 38.104 BS demodulation requirements for 2-step RACH | ZTE Wistron Telecom AB | not pursued |  | R4-2017635 |
| R4-2015178 | Simulation results on BS demodulation requirements for 2-step RACH | ZTE Wistron Telecom AB | noted |  |  |
| R4-2015179 | Simulation results collection on BS demodulation requirements for 2-step RACH | ZTE Wistron Telecom AB | noted |  |  |
| R4-2015180 | Open issues on BS demodulation requirements for 2-step RACH | ZTE Wistron Telecom AB | noted |  |  |
| R4-2015181 | Considerations on enabling UL-MIMO support for SUL | ZTE Wistron Telecom AB | noted |  |  |
| R4-2015182 | Initial considerations on 2Tx switching between 2 carriers | ZTE Wistron Telecom AB | noted |  |  |
| R4-2015183 | Rel-16 NR HST BS demodulation requirements | ZTE Wistron Telecom AB | noted |  |  |
| R4-2015184 | TR 38.717-02-01 v0.2.0 | ZTE Wistron Telecom AB | agreed |  |  |
| R4-2015185 | TR 38.717-03-02 v0.2.0 | ZTE Wistron Telecom AB | agreed |  |  |
| R4-2015186 | Work plan and procedure for basket WI on high power UE for NR inter-band CA with 2 bands DL and 2 bands UL | China Telecom | approved |  |  |
| R4-2015187 | TR skeleton for TR 38.xxx 0.0.1: High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink | China Telecom | agreed |  |  |
| R4-2015188 | Draft TR 38.xxx v0.1.0: High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink | China Telecom | agreed |  |  |
| R4-2015189 | Revised WID: High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink | China Telecom | endorsed |  | R4-2016853 |
| R4-2015190 | Discussion on SAR schemes for UE power class 2 NR inter-band CA with 2UL | China Telecom | noted |  |  |
| R4-2015191 | Discussion on SAR schemes for UE power class 2 NR SUL configurations | China Telecom | noted |  |  |
| R4-2015192 | draft CR to 38.101-1 Introduce SAR solution for UE power class 2 NR inter-band CA with 2UL | China Telecom | not pursued |  |  |
| R4-2015193 | draft CR to 38.101-1 Introduce band combination requirements for PC2 CA\_n1A-n78A | China Telecom | withdrawn |  |  |
| R4-2015194 | draft CR to 38.101-1 Introduce SAR solution for UE power class 2 NR SUL configurations | China Telecom | not pursued |  |  |
| R4-2015195 | CR to 38.101-1 Add requirement on the UL CA configurations with no DL interruption | China Telecom | revised |  | R4-2016818 |
| R4-2015196 | CR to 38.101-3: Add requirement on the inter-band EN-DC with no DL interruption | China Telecom | revised |  | R4-2016819 |
| R4-2015197 | Discussion on 2Tx switching between carrier 1 and carrier 2 | China Telecom | noted |  |  |
| R4-2015198 | Discussion on Tx switching between 1 carrier on band A and 2 contiguous aggregated carriers on band B | China Telecom | noted |  |  |
| R4-2015199 | Discussion about evaluation methodology for relaxation of RLM/BFD measurements | Nokia Solutions & Networks (I) | noted |  |  |
| R4-2015200 | TP to TR 38.808 BS RF for NR beyond 52.6 GHz | Nokia, Nokia Shanghai Bell | revised |  | R4-2016995 |
| R4-2015201 | Extension of LTE iterbCA 4/5 WI to include 6 bands | VODAFONE Group Plc | approved |  |  |
| R4-2015202 | CR to 38.133 - Introducing NR-U random access requirements | Nokia, Nokia Shanghai Bell | postponed |  |  |
| R4-2015203 | CR to 38.133 - NR-U SCell activation and deactivation requirements | Nokia, Nokia Shanghai Bell | merged |  |  |
| R4-2015204 | CR to 38.133 - Clarification of NR-U timing requirements | Nokia, Nokia Shanghai Bell | merged |  |  |
| R4-2015205 | CR to 38.133 on NR-U intra-frequency measurements | Nokia, Nokia Shanghai Bell | merged |  |  |
| R4-2015206 | Numerology and channel bandwidth discussion for NR beyond 52.6 GHz | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015207 | IAB EVM procedure and other consideration | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015208 | CR on BWP switch | MediaTek inc. | withdrawn |  |  |
| R4-2015209 | CR on TCI state | MediaTek inc. | withdrawn |  |  |
| R4-2015210 | CR on MO merge | MediaTek inc. | agreed |  |  |
| R4-2015211 | Remaining issues on WRC-19 | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015212 | More on DC location reporting for Intra band UL CA | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015213 | CR on introduce the gain to CSI-RSRP measurements point in FR1 and FR2 | Xiaomi | endorsed |  | - |
| R4-2015214 | Revised Rel-17 WID on DC of 4 bands LTE inter-band CA (4DL1UL) and 1 NR band (1DL1UL) | Nokia, Nokia Shanghai Bell | endorsed |  |  |
| R4-2015215 | CR to introduce new combinations of LTE 4band + NR 1band for TS 38.101-3 | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2015216 | draftTR 37.717-41-11 v0.2.0 | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2015217 | draftCR to introduce CADC\_n1-n258 to 38.101-3 | Nokia | endorsed |  |  |
| R4-2015218 | draftCR to introduce CADC\_n40-n258 to 38.101-3 | Nokia | endorsed |  |  |
| R4-2015219 | draftCR to introduce CADC\_n78-n258 to 38.101-3 | Nokia | endorsed |  |  |
| R4-2015220 | draftCR to introduce DC\_8A\_n258 to 38.101-3 | Nokia | endorsed |  |  |
| R4-2015221 | TP for 37.717-11-11 to introduce DC\_7\_n2A | Nokia | revised |  | R4-2016667 |
| R4-2015222 | draftCR to introduce DC\_3A-8A\_n258 to 38.101-3 | Nokia | endorsed |  |  |
| R4-2015223 | draftCR to introduce DC\_7A-8A\_n258 to 38.101-3 | Nokia | endorsed |  |  |
| R4-2015224 | draftCR to introduce DC\_3A-7A\_n258 to 38.101-3 | Nokia | endorsed |  |  |
| R4-2015225 | TP for 37.717-21-11 to introduce DC\_5A-7A\_n7A | Nokia | revised |  | R4-2016668 |
| R4-2015226 | TP for 37.717-21-11 to introduce DC\_2A-28A\_n7A | Nokia, ZTE | approved |  |  |
| R4-2015227 | TP for 37.717-21-11 to introduce DC\_28A-66A\_n7A | Nokia, ZTE | revised |  | R4-2016669 |
| R4-2015228 | TP for 37.717-21-11 to introduce DC\_7A-28A\_n2A | Nokia, ZTE | approved |  |  |
| R4-2015229 | TP for 37.717-21-11 to introduce DC\_2A-7A\_n7A | Nokia | approved |  |  |
| R4-2015230 | draftCR to introduce DC\_3A-7A-8A\_n258 to 38.101-3 | Nokia | endorsed |  |  |
| R4-2015231 | TP for 37.717-31-11 to introduce DC\_2A-7A-28A\_n7A | Nokia | approved |  |  |
| R4-2015232 | TP for 37.717-11-21 to introduce DC\_8A\_n78A-n258 | Nokia | approved |  |  |
| R4-2015233 | TP for 37.717-11-21 to introduce DC\_8A\_n40A-n258 | Nokia | approved |  |  |
| R4-2015234 | TP for 37.717-11-21 to introduce DC\_1A-8A\_n78A-n258 | Nokia | approved |  |  |
| R4-2015235 | TP for 37.717-11-21 to introduce DC\_3A-8A\_n78A-n258 | Nokia | approved |  |  |
| R4-2015236 | TP for 37.717-11-21 to introduce DC\_7A-8A\_n78A-n258 | Nokia | approved |  |  |
| R4-2015237 | TP for 37.717-11-21 to introduce DC\_1A-8A\_n40A-n258 | Nokia | approved |  |  |
| R4-2015238 | TP for 37.717-11-21 to introduce DC\_3A-8A\_n40A-n258 | Nokia | approved |  |  |
| R4-2015239 | TP for 37.717-11-21 to introduce DC\_7A-8A\_n40A-n258 | Nokia | approved |  |  |
| R4-2015240 | TP for 37.717-11-21 to introduce DC\_3A-7A-8A\_n78A-n258 | Nokia | approved |  |  |
| R4-2015241 | TP for 37.717-11-21 to introduce DC\_3A-7A-8A\_n40A-n258 | Nokia | approved |  |  |
| R4-2015242 | draftCR to introduce CA\_n1A-n40A-n258 to 38.101-3 | Nokia | endorsed |  |  |
| R4-2015243 | draftCR to introduce CA\_n1A-n78A-n258 to 38.101-3 | Nokia | endorsed |  |  |
| R4-2015244 | draftCR to introduce CA\_n40A-n78A-n258 to 38.101-3 | Nokia | endorsed |  |  |
| R4-2015245 | TP for 37.717-11-11 to introduce DC\_71A\_n71A | Nokia, T-Mobile | revised |  | R4-2016670 |
| R4-2015246 | TP for 37.717-21-11 to introduce DC\_2A-71A\_n71A and DC\_66A-71A\_n71A | Nokia, T-Mobile | approved |  | - |
| R4-2015247 | TP for 37.717-31-11 to introduce DC\_2A-66A-71A\_n71A | Nokia, T-Mobile | approved |  |  |
| R4-2015248 | TP for 37.717-31-11 to introduce DC\_2-5-66\_n77A | Nokia, Verizon | approved |  |  |
| R4-2015249 | TP for 37.717-31-11 to introduce DC\_2-13-66\_n77A | Nokia, Verizon | approved |  |  |
| R4-2015250 | TP for 37.717-31-11 to introduce DC\_2-48-66\_n77A | Nokia, Verizon | approved |  |  |
| R4-2015251 | NR-U - On wideband operation | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015252 | NTN - On use cases and deployment scenarios | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015253 | CR for TS 38.101-3 switching period for V2X con-current operation | Xiaomi | withdrawn |  |  |
| R4-2015254 | [UE EMC] Further discussion on UE EMC enhancement | Xiaomi | not treated |  |  |
| R4-2015255 | on FR2 spurious emission NS handling | Xiaomi | noted |  |  |
| R4-2015256 | on Rel-17 V2X work | Xiaomi | noted |  |  |
| R4-2015257 | on switching period | Xiaomi | noted |  |  |
| R4-2015258 | on UE orientation clarification | Xiaomi | noted |  |  |
| R4-2015259 | TP for DC\_42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | approved |  | - |
| R4-2015260 | Discussion on SAR issue for HP UE inter-band UL CA | Xiaomi | noted |  |  |
| R4-2015261 | Discussion on HP UE for TDD intra-band contiguous UL CA | Xiaomi | noted |  |  |
| R4-2015262 | consideration on UL Tx switching enhancement in Rel 17 | Xiaomi | noted |  |  |
| R4-2015263 | Initial discussion for NR to support non-terrestrial networks | Xiaomi | noted |  |  |
| R4-2015264 | CR to TS 38.101-3: corrections on ACS for intra-band contiguous EN-DC | Xiaomi | agreed |  |  |
| R4-2015265 | Discussion on Tx diversity open issues | Xiaomi | noted |  |  |
| R4-2015266 | MSD analysis on high power UE for CA\_n41-n79 | Xiaomi | noted |  |  |
| R4-2015267 | CR for TS 38.101-3 switching period for V2X con-current operation | Beijing Xiaomi Electronics | not pursued |  |  |
| R4-2015268 | TP to TR 37.717-21-11 DC\_1A-40C\_n78A | Huawei, HiSilicon, Ericsson | approved |  |  |
| R4-2015269 | TP to TR 37.717-21-11 DC\_3A-40C\_n78A | Huawei, HiSilicon, Ericsson | approved |  |  |
| R4-2015270 | TP to TR 37.717-21-11 DC\_7A-40C\_n78A | Huawei, HiSilicon, Ericsson | approved |  |  |
| R4-2015271 | TP to TR 37.717-21-11 DC\_8A-40C\_n78A | Huawei, HiSilicon | approved |  |  |
| R4-2015272 | TP to TR 37.717-31-11 DC\_1A-3A-40C\_n78A | Huawei, HiSilicon, Nokia, Ericsson | approved |  |  |
| R4-2015273 | TP to TR 37.717-31-11 DC\_1A-7A-40C\_n78A | Huawei, HiSilicon, Ericsson | approved |  |  |
| R4-2015274 | TP to TR 37.717-31-11 DC\_1A-8A-40C\_n78A | Huawei, HiSilicon, Nokia | approved |  |  |
| R4-2015275 | TP to TR 37.717-31-11 DC\_3A-7A-40C\_n78A | Huawei, HiSilicon, Ericsson | approved |  |  |
| R4-2015276 | TP to TR 37.717-31-11 DC\_3A-8A-40C\_n78A | Huawei, HiSilicon, Nokia | approved |  |  |
| R4-2015277 | TP to TR 37.717-31-11 DC\_7A-8A-40C\_n78A | Huawei, HiSilicon | approved |  |  |
| R4-2015278 | TP to TR 37.717-41-11 DC\_1A-3A-7A-40C\_n78A | Huawei, HiSilicon | revised |  | R4-2016672 |
| R4-2015279 | TP to TR 37.717-41-11 DC\_1A-3A-8A-40C\_n78A | Huawei, HiSilicon, Nokia | revised |  | R4-2016673 |
| R4-2015280 | TP to TR 37.717-41-11 DC\_1A-7A-8A-40C\_n78A | Huawei, HiSilicon | revised |  | R4-2016674 |
| R4-2015281 | TP to TR 37.717-41-11 DC\_3A-7A-8A-40C\_n78A | Huawei, HiSilicon | revised |  | R4-2016675 |
| R4-2015282 | TP to TR 37.717-51-11 DC\_1A-3A-7A-8A-40C\_n78A | Huawei, HiSilicon | approved |  |  |
| R4-2015283 | Discussion on the introduction of 2Tx - 2Tx UE uplink switch | Huawei, HiSilicon | noted |  |  |
| R4-2015284 | Removing restrictions on SUL UL-MIMO in Rel-17 | Huawei, HiSilicon | noted |  |  |
| R4-2015285 | New basket WID on bands with UL-MIMO PC3 | Huawei, HiSilicon | not treated |  |  |
| R4-2015286 | Discussion on the SAR solutions for SUL band combinations | Huawei, HiSilicon | noted |  |  |
| R4-2015287 | Discussion on the SAR solutions for UL CA band combinations | Huawei, HiSilicon | noted |  |  |
| R4-2015288 | Discussion on new SUL band n97 UE requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015289 | Discussion on new SUL band n97 BS requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015290 | Discussion on new SUL band n98 UE requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015291 | Discussion on new SUL band n98 BS requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015292 | Adding 40M bandwidth for band n80 and n83 | Huawei, HiSilicon | noted |  |  |
| R4-2015293 | draftCR to 38101-1 to add 40MHz BW for band n80 | Huawei, HiSilicon | endorsed |  |  |
| R4-2015294 | draftCR to 38104 to add 40MHz BW for band n80 | Huawei, HiSilicon | endorsed |  |  |
| R4-2015295 | draftCR to 38104 to add 40MHz BW for band n83 | Huawei, HiSilicon | endorsed |  |  |
| R4-2015296 | Adding 90 and 100MHz UE bandwidth for band n40 | Huawei, HiSilicon | noted |  |  |
| R4-2015297 | draftCR to 38101-1 to add 90 and 100MHz BW for band n40 | Huawei, HiSilicon | revised |  | R4-2016861 |
| R4-2015298 | draftCR to 38104 to add 90MHz BW for band n40 | Huawei, HiSilicon | not pursued |  |  |
| R4-2015299 | Editorial correction on section 5.2C to 38.101-1 R16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015300 | CR to TS 38.133 on DCI based BWP switch requirements applicability | NEC | revised |  | R4-2017335 |
| R4-2015301 | Discussion on RRM requirements for SCell dormancy | NEC | noted |  |  |
| R4-2015302 | Draft CR on TC for UE specific CBW change on FR2 NR PCell in NR SA | NEC | revised |  | R4-2017218 |
| R4-2015303 | Draft CR on TC for 2-step RA type contention based RA in FR1 and FR2 NR cells for EN-DC | NEC | revised |  | R4-2017258 |
| R4-2015304 | Discussion on cross carrier BWP switch delay requirements for single and multiple CC | NEC | noted |  |  |
| R4-2015305 | CR to TS 38.133 on DCI based BWP switch requirements for cross carrier scheduling | NEC | revised |  | R4-2017323 |
| R4-2015306 | CR to TS 38.133 on clarification of applicability of SCell activation requirements for unknown FR1 cell | NEC | merged |  |  |
| R4-2015307 | Channel bandwidth and subcarrier spacing for 52.6 GHz to 71GHz | NEC | noted |  |  |
| R4-2015308 | Discussion on spatial relation switch for uplink | NTT DOCOMO, INC. | noted |  |  |
| R4-2015309 | Discussion on inter-band CA requirement for FR2 | NTT DOCOMO, INC. | noted |  |  |
| R4-2015310 | Views on PUCCH SCell Activation/Deactivation delay requirements | NTT DOCOMO, INC. | noted |  |  |
| R4-2015311 | Framework on NR MIMO OTA requirements development | CAICT,vivo | noted |  |  |
| R4-2015312 | Views on test applicability rule for CA PDSCH requirements | NTT DOCOMO, INC. | noted |  |  |
| R4-2015313 | Views on HST applicability rules | NTT DOCOMO, INC. | noted |  |  |
| R4-2015314 | Views on 256QAM UE requirements for FR2 | NTT DOCOMO, INC. | noted |  |  |
| R4-2015315 | Views on 256QAM SDR requirements for FR2 | NTT DOCOMO, INC. | noted |  |  |
| R4-2015316 | Views on release independence aspect for power imbalance requirements | NTT DOCOMO, INC. | noted |  |  |
| R4-2015317 | Views on FR1 power imbalance requirements | NTT DOCOMO, INC. | noted |  |  |
| R4-2015318 | CR: FR1 EN-DC power imbalance requirements | NTT DOCOMO, INC, SoftBank Corp. | revised |  | R4-2017571 |
| R4-2015319 | Test methodology for high DL power and low UL power test cases | CAICT | noted |  |  |
| R4-2015320 | Further consideration on simplification of band configuration | NTT DOCOMO INC. | noted |  |  |
| R4-2015321 | Remaining issues in Transparent Tx Diversity | vivo | noted |  |  |
| R4-2015322 | Remaining issues in Power class | vivo | noted |  |  |
| R4-2015323 | Alignment of descritpion of the power class restriction for inter-band EN-DC | vivo | not pursued |  |  |
| R4-2015324 | Correction of delta Powerclass for Inter-band EN-DC | vivo, CMCC, China Unicom | agreed |  |  |
| R4-2015325 | Enhancment of Tx Switching in R17 | vivo | noted |  |  |
| R4-2015326 | Discussion on HPUE for TDD intra-band contiguous UL CA | vivo | noted |  |  |
| R4-2015327 | Discussion on FR2 inter-band DL CA enhancements | vivo | noted |  |  |
| R4-2015328 | Discussion on FR2 inter-band UL CA | vivo | noted |  |  |
| R4-2015329 | Discussion on SAR solution for PC2 inter-band NR CA | vivo | noted |  |  |
| R4-2015330 | Discussion on SAR solution for PC2 UE with SUL | vivo | noted |  |  |
| R4-2015331 | CR on NR power class under EN-DC | OPPO | revised |  | R4-2016842 |
| R4-2015332 | Discussion on WRC-19 requirements | OPPO | noted |  |  |
| R4-2015333 | CR on V2X bands reference table | OPPO | revised |  | R4-2016805 |
| R4-2015334 | Discussion on FR2 equal PSD in CA and draft LS | OPPO | noted |  |  |
| R4-2015335 | CR on FR2 equal PSD in UL CA | OPPO | not pursued |  |  |
| R4-2015336 | CR on FR2 equal PSD in UL CA (R16) | OPPO | not pursued |  |  |
| R4-2015337 | CR on simultaneous Tx-Rx for EN-DC | OPPO | not pursued |  |  |
| R4-2015338 | CR on simultaneous Tx-Rx for EN-DC (R16 mirror CR) | OPPO | withdrawn |  |  |
| R4-2015339 | CR on sum of power for multiple transmit connectors | OPPO | revised |  | R4-2016834 |
| R4-2015340 | Discussion on Rel-16 TxD | OPPO | noted |  |  |
| R4-2015341 | CR on TxD requirements | OPPO | not pursued |  |  |
| R4-2015342 | Reply LS on Tx diversity testing | OPPO | noted |  |  |
| R4-2015343 | Discussion on Rel-16 FR2 inter-band DL CA | OPPO | noted |  |  |
| R4-2015344 | Discussion on Rel-16 BC | OPPO | noted |  |  |
| R4-2015345 | Discussion on SUL HPUE SAR | OPPO | noted |  |  |
| R4-2015346 | Discussion on inter-band CA HPUE SAR | OPPO | noted |  |  |
| R4-2015347 | Discussion on Rel-17 FWA | OPPO | noted |  |  |
| R4-2015348 | Discussion on Rel-17 FR2 inter-band DL CA | OPPO | noted |  |  |
| R4-2015349 | Discussion on Rel-17 FR2 calibration gap | OPPO | noted |  |  |
| R4-2015350 | Views on DSS in band 48/n48 | OPPO | noted |  |  |
| R4-2015351 | Release independence for 35MHz and 45Mhz BW | OPPO | noted |  |  |
| R4-2015352 | Analysis on the impact of number of test points | OPPO | noted |  |  |
| R4-2015353 | The rules for 3D-MPAC system implementation | OPPO | noted |  |  |
| R4-2015354 | Discussion on Rel-17 FR1 intra-band contiguous HPUE | OPPO | noted |  |  |
| R4-2015355 | Discussion on Rel-17 FR1 Tx switching | OPPO | noted |  |  |
| R4-2015356 | Discussion on the new SUL band for 1.6GHz | Huawei,HiSilicon | noted |  |  |
| R4-2015357 | draftCR to 38101-1 on introducing new SUL band n99 | Huawei,HiSilicon | not pursued |  |  |
| R4-2015358 | draftCR to 38104 on introducing new SUL band n99 | Huawei,HiSilicon | not pursued |  |  |
| R4-2015359 | draftCR to 36104 on introducing new SUL band n99 | Huawei,HiSilicon | not pursued |  |  |
| R4-2015360 | draftCR to 38141-1 on introducing new SUL band n99 | Huawei,HiSilicon | not pursued |  |  |
| R4-2015361 | draftCR to 38141-2 on introducing new SUL band n96 | Huawei,HiSilicon | not pursued |  |  |
| R4-2015362 | draftCR to 36141 on introducing new SUL band n99 | Huawei,HiSilicon | not pursued |  |  |
| R4-2015363 | draftCR to 37104 on introducing new SUL band n99 | Huawei,HiSilicon | not pursued |  |  |
| R4-2015364 | draftCR to 37141 on introducing new SUL band n99 | Huawei,HiSilicon | not pursued |  |  |
| R4-2015365 | draftCR to 37105 on introducing new SUL band n99 | Huawei,HiSilicon | not pursued |  |  |
| R4-2015366 | draftCR to 37145-1 on introducing new SUL band n99 | Huawei,HiSilicon | not pursued |  |  |
| R4-2015367 | draftCR to 37145-2 on introducing new SUL band n99 | Huawei,HiSilicon | not pursued |  |  |
| R4-2015368 | Discussion on MIMO OTA test methodologies | Huawei,HiSilicon | noted |  |  |
| R4-2015369 | CR on PRS-RSRP report mapping | CATT | revised |  | R4-2017146 |
| R4-2015370 | CR on conditions for NR RSTD measurement | CATT | revised |  | R4-2017157 |
| R4-2015371 | CR to TS 38.104 with NR-U remaining open issues updates | Nokia, Nokia Shanghai Bell | revised |  | R4-2017462 |
| R4-2015372 | On band n96 remaining issues | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015373 | On interfering signals for NR-U Rx requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015374 | BS OBUE mask for NR-U | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015375 | Further discussion on additional optional EDT level for test | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015376 | CR to 37.107 with update of EDT level | Nokia, Nokia Shanghai Bell | revised |  | R4-2017451 |
| R4-2015377 | CR to 37.107 with update of EDT level | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2015378 | On PN23 sequence generation for data content for NR test models | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015379 | CR to TS 38.141-1 clarification on PN23 sequence generation | Nokia, Nokia Shanghai Bell | postponed |  |  |
| R4-2015380 | CR to TS 38.141-1 clarification on PN23 sequence generation | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2015381 | CR to TS 38.141-2 clarification on PN23 sequence generation | Nokia, Nokia Shanghai Bell | postponed |  |  |
| R4-2015382 | CR to TS 38.141-2 clarification on PN23 sequence generation | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2015383 | Draft CR to TS 37.107 With NR-U intorduction for perfromance part | Nokia, Nokia Shanghai Bell | not pursued |  |  |
| R4-2015384 | Discussion on NR-U BS RF conformance tests | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015385 | Scell activation and deactivation delay requirements in NR-U | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015386 | NR-U Random access | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015387 | Remaining aspects in measurement requirements in NR-U | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015388 | On NR-U Timing requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015389 | Remaining issues in beam management in NR-U | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015390 | On NR-U RRM test cases | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015391 | On NR-U RRM performance | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015392 | TP for TR 36.717-02-01: CA\_2A-8A | Huawei, HiSilicon | noted |  |  |
| R4-2015393 | Draft CR to 36.101 to add configuration CA\_1A-3A-8A-40C | Huawei, HiSilicon | endorsed |  |  |
| R4-2015394 | Draft CR to 36.101 to add CA\_1A-3C-7A-8A with UL CA\_3C | Huawei, HiSilicon | endorsed |  |  |
| R4-2015395 | TP for TR 36.717-04-01: CA\_1A-7A-8A-38A | Huawei, HiSilicon | revised |  | R4-2016770 |
| R4-2015396 | TP for TR 36.717-04-01: CA\_1A-8A-20A-38A | Huawei, HiSilicon | revised |  | R4-2016771 |
| R4-2015397 | TP for TR 36.717-04-01: CA\_3A-8A-20A-38A | Huawei, HiSilicon | revised |  | R4-2016772 |
| R4-2015398 | TP for TR 36.717-04-01: CA\_1A-3C-8A-38A with UL CA\_3C | Huawei, HiSilicon | revised |  | R4-2016773 |
| R4-2015399 | TP for TR 36.717-04-01: CA\_1A-3C-8A-20A with UL CA\_3C | Huawei, HiSilicon | revised |  | R4-2016774 |
| R4-2015400 | Updated TP for TR 36.717-04-01: CA\_1A-3C-20A-38A with UL CA\_3C | Huawei, HiSilicon | revised |  | R4-2016775 |
| R4-2015401 | TP for TR 36.717-04-01: CA\_1A-3A-7A-8A-40A / CA\_1A-3A-7A-8A-40C | Huawei, HiSilicon | revised |  | R4-2016776 |
| R4-2015402 | Updated TP for TR 36.717-04-01: CA\_2A-5A-7A-66A-66A | Huawei, HiSilicon | approved |  |  |
| R4-2015403 | TP for TR 37.717-11-11: DC\_12\_n71 | Huawei, HiSilicon | noted |  | - |
| R4-2015404 | TP for TR 37.717-21-11: DC\_7A-66A\_n7A/DC\_7A-66A-66A\_n7A | Huawei, HiSilicon | approved |  |  |
| R4-2015405 | TP for TR 37.717-31-11: DC\_1A-7A-8A\_n28A | Huawei, HiSilicon | approved |  |  |
| R4-2015406 | TP for TR 37.717-31-11: DC\_3A-7A-8A\_n28A | Huawei, HiSilicon | approved |  |  |
| R4-2015407 | TP for TR 37.717-31-11: DC\_1A-7A-28A\_n3A | Huawei, HiSilicon | approved |  |  |
| R4-2015408 | TP for TR 37.717-31-11: DC\_3A-8A-40A\_n1A/DC\_3A-8A-40C\_n1A | Huawei, HiSilicon | approved |  |  |
| R4-2015409 | TP for TR 37.717-31-11: DC\_7A-8A-40A\_n1A/DC\_7A-8A-40C\_n1A | Huawei, HiSilicon | approved |  |  |
| R4-2015410 | DraftCR for 38.101-3 to add configuration DC\_3A-7A-40C\_n1A | Huawei, HiSilicon | endorsed |  |  |
| R4-2015411 | TP for TR 37.717-31-11: DC\_2A-28A-66A\_n7A | Huawei, HiSilicon | approved |  |  |
| R4-2015412 | TP for TR 37.717-31-11: DC\_2A-5A-7A\_n7A | Huawei, HiSilicon | approved |  |  |
| R4-2015413 | TP for TR 37.717-31-11: DC\_2A-7A-66A\_n7A/DC\_2A-7A-66A-66A\_n7A | Huawei, HiSilicon | approved |  |  |
| R4-2015414 | TP for TR 37.717-31-11: DC\_5A-7A-66A\_n7A/DC\_5A-7A-66A-66A\_n7A | Huawei, HiSilicon | approved |  |  |
| R4-2015415 | TP for TR 37.717-31-11: DC\_7A-28A-66A\_n7A | Huawei, HiSilicon | approved |  |  |
| R4-2015416 | TP for TR 37.717-41-11: DC\_2A-7A-28A-66A\_n7A | Huawei, HiSilicon | approved |  |  |
| R4-2015417 | TP for TR 37.717-41-11:DC\_2A-5A-7A-66A\_n7A/DC\_2A-5A-7A-66A-66A\_n7A | Huawei, HiSilicon | approved |  |  |
| R4-2015418 | TP for TR 37.717-41-11:DC\_1A-3A-7A-8A\_n28A | Huawei, HiSilicon | approved |  |  |
| R4-2015419 | TP for TR 37.717-41-11:DC\_3A-7A-8A-40A\_n1A/DC\_3A-7A-8A-40C\_n1A | Huawei, HiSilicon | revised |  | R4-2016677 |
| R4-2015420 | DraftCR for 38.101-3 to add UL configuration DC\_3C\_n1A-n78A | Huawei, HiSilicon | endorsed |  |  |
| R4-2015421 | TP for TR 37.717-11-21:DC\_3A-20A\_n1A-n78A/DC\_3C-20A\_n1A-n78A | Huawei, HiSilicon | approved |  |  |
| R4-2015422 | TP for TR 37.717-11-21:DC\_7A-20A\_n1A-n78A | Huawei, HiSilicon | approved |  |  |
| R4-2015423 | DraftCR for 38.101-3 to add UL configuration DC\_3C\_n1A and DC\_3C\_n78A for DC\_3C-7A\_n1A-n78A | Huawei, HiSilicon | endorsed |  |  |
| R4-2015424 | TP for TR 37.717-11-21:DC\_3A-7A-20A\_n1A-n78A/DC\_3C-7A-20A\_n1A-n78A | Huawei, HiSilicon | approved |  |  |
| R4-2015425 | DraftCR for 38.101-1 to add BCS1 for CA\_n20A-n28A | Huawei, HiSilicon | not pursued |  | - |
| R4-2015426 | DraftCR for 38.101-1 to add BCS1 for CA\_n1A-n78A CA\_n1A-n78(2A) | Huawei, HiSilicon | endorsed |  |  |
| R4-2015427 | DraftCR for 38.101-1 to add BCS1 for CA\_n8A-n78A and CA\_n8A-n78(2A)\_BCS0 | Huawei, HiSilicon | endorsed |  |  |
| R4-2015428 | TP for TR 38.717-02-01: to add UL configuration for CA\_n78A-n79A and CA\_n78(2A)-n79A\_BCS0 | Huawei, HiSilicon | revised |  | R4-2016689 |
| R4-2015429 | TP for TR 38.717-02-01: CA\_n8A-n28A | Huawei, HiSilicon | revised |  | R4-2016690 |
| R4-2015430 | TP for TR 38.717-02-01: CA\_n3A-n7A | Huawei, HiSilicon | revised |  | R4-2016691 |
| R4-2015431 | DraftCR for 38.101-1 to add BCS1 for CA\_n77(2A) | Huawei, HiSilicon | endorsed |  |  |
| R4-2015432 | REFSENS of n3, n8, n25 and n71 for new channel bandwidth | Murata Manufacturing Co Ltd. | noted |  |  |
| R4-2015433 | DraftCR to TS 38.174: System parameter corrections | Nokia, Nokia Shanghai Bell | not pursued |  |  |
| R4-2015434 | DraftCR to TS 38.174: General section corrections | Nokia, Nokia Shanghai Bell | not pursued |  |  |
| R4-2015435 | DraftCR to TS 38.174: Transmitted signal quality | Nokia, Nokia Shanghai Bell | not pursued |  |  |
| R4-2015436 | DraftCR to TS 38.174: Sensitivity corrections | Nokia, Nokia Shanghai Bell | revised |  | R4-2017479 |
| R4-2015437 | DraftCR to TS 38.174: In-band selectivity corrections | Nokia, Nokia Shanghai Bell | revised |  | R4-2017480 |
| R4-2015438 | DraftCR to TS 38.174: OOB blocking and Rx spurious corrections | Nokia, Nokia Shanghai Bell | revised |  | R4-2017484 |
| R4-2015439 | IAB RF conformance testing framework | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015440 | Test configurations for IAB RF conformance testing | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015441 | Radiated conformance testing, Tx requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015442 | Radiated conformance testing, Rx requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015443 | Draft LS: Phase noise and RF impairment considerations | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015444 | UE RF for NR beyond 52.6 GHz | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015445 | Correction to CSSF calculation R15 | Huawei, HiSilicon | postponed |  | - |
| R4-2015446 | Correction to CSSF calculation R16 | Huawei, HiSilicon | postponed |  |  |
| R4-2015447 | Correction to CSI-RS RMC configuration R15 | Huawei, HiSilicon | revised |  | R4-2017043 |
| R4-2015448 | Correction to CSI-RS RMC configuration R16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015449 | Correction to cell reselection test cases R15 | Huawei, HiSilicon | revised |  | R4-2017053 |
| R4-2015450 | Correction to cell reselection test cases R16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015451 | Correction to inter-RAT handover test cases R15 | Huawei, HiSilicon | revised |  | R4-2017054 |
| R4-2015452 | Correction to inter-RAT handover test cases R16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015453 | Correction to NR measurement under LTE SA test cases R15 | Huawei, HiSilicon | revised |  | R4-2017055 |
| R4-2015454 | Correction to NR measurement under LTE SA test cases R16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015455 | Correction to inter-RAT SFTD measurement test cases R15 | Huawei, HiSilicon | revised |  | R4-2017056 |
| R4-2015456 | Correction to inter-RAT SFTD measurement test cases R16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015457 | CR on maintaining antenna configurations in TS38.133 | Huawei, HiSilicon | not pursued |  |  |
| R4-2015458 | CR on maintaining Antenna configurations in TS38.133 R16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2015459 | CR on maintaining BFD/CBD measurements test cases R15 | Huawei, HiSilicon | agreed |  |  |
| R4-2015460 | CR on maintaining BFD/CBD measurements test cases in TS38.133 R16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015461 | CR on maintaining V2X test cases in TS36.133 R14 | Huawei, HiSilicon | revised |  | R4-2017063 |
| R4-2015462 | CR on maintaining V2X test cases in TS36.133 R15 | Huawei, HiSilicon | agreed |  |  |
| R4-2015463 | CR on maintaining V2X test cases in TS36.133 R16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015464 | CR on maintaining DAPS handover requirements | Huawei, HiSilicon | postponed |  |  |
| R4-2015465 | Discussion on DAPS handover test cases | Huawei, HiSilicon | noted |  |  |
| R4-2015466 | DraftCR on inter-band DAPS handover tests | Huawei, HiSilicon | revised |  | R4-2017098 |
| R4-2015467 | DraftCR on PSBCH-RSRP accuracy requirements | Huawei, HiSilicon | revised |  | R4-2017104 |
| R4-2015468 | Discussion on UE Autonomous Resource Selection/Reselection Test for NR V2X | Huawei, HiSilicon | noted |  |  |
| R4-2015469 | DraftCR on UE Transmission Timing Accuracy Tests for NR V2X | Huawei, HiSilicon | revised |  | R4-2017106 |
| R4-2015470 | DraftCR on Interruption Tests for NR V2X | Huawei, HiSilicon | revised |  | R4-2017112 |
| R4-2015471 | Discussion on L1-SINR measurement accuracy requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015472 | Discussion on L1-SINR measurement tests for NR eMIMO | Huawei, HiSilicon | noted |  |  |
| R4-2015473 | DraftCR on L1-SINR measurement procedure tests with SSB based CMR and dedicated IMR | Huawei, HiSilicon | revised |  | R4-2017169 |
| R4-2015474 | DraftCR on L1-SINR measurement accuracy tests with SSB based CMR and dedicated IMR | Huawei, HiSilicon | postponed |  |  |
| R4-2015475 | Discussion on RRM test cases for FR2 inter-band CA | Huawei, HiSilicon | noted |  |  |
| R4-2015476 | DraftCR on SCell activation and deactication delay test for FR2 inter-band CA | Huawei, HiSilicon | revised |  | R4-2017221 |
| R4-2015477 | CR on maintaining L1-RSRP measurements test cases R16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015478 | Discussion on MRTD/MTTD requirements for FR1 intra-band NCCA | Huawei, HiSilicon | noted |  |  |
| R4-2015479 | CR on MRTD/MTTD requirements for FR1 intra-band NCCA R16 | Huawei, HiSilicon | postponed |  |  |
| R4-2015480 | DraftCR on RRM core requirements for FR2 new FWA UE in 38.133 | Huawei, HiSilicon | revised |  | R4-2017261 |
| R4-2015481 | DraftCR on RRM performance requirements for FR2 new FWA UE in 38.133 | Huawei, HiSilicon | revised |  | R4-2017263 |
| R4-2015482 | Correction CR to Rel-16 UE power saving requirements | Huawei, HiSilicon | revised |  | R4-2017131 |
| R4-2015483 | Discussion on test cases for measurement relaxation in power saving | Huawei, HiSilicon | noted |  |  |
| R4-2015484 | Test case for cell reselection to FR2 intra-frequency NR case for UE configured with relaxed measurement | Huawei, HiSilicon | revised |  | R4-2017140 |
| R4-2015485 | Preliminary discussion on RLM/BFD relaxation in power saving enhancements | Huawei, HiSilicon | noted |  |  |
| R4-2015486 | Discussion on test case on TX switching between two uplink carriers | Huawei, HiSilicon | noted |  |  |
| R4-2015487 | Test case for DL Interruptions at UE switching between LTE 1Tx carrier and NR 2Tx carrier in inter-band ENDC | Huawei, HiSilicon | revised |  | R4-2017326 |
| R4-2015488 | Correction on DL interruption on Tx Switching between two uplink carriers | Huawei, HiSilicon | agreed |  |  |
| R4-2015489 | Discussion on remaining issues for CSI-RS based L3 measurement | Huawei, HiSilicon | noted |  |  |
| R4-2015490 | CR on CSI-RS based intra-frequency measurement requirements | Huawei, HiSilicon | revised |  | R4-2017228 |
| R4-2015491 | CR on CSSF definition for CSI-RS based measurement | Huawei, HiSilicon | postponed |  |  |
| R4-2015492 | Correction on SSB based L1-RSRP Reporting for HST | Huawei, HiSilicon | merged |  |  |
| R4-2015493 | Test cases for inter-RAT cell identification in connected mode for HST | Huawei, HiSilicon | revised |  | R4-2017250 |
| R4-2015494 | Accuracy requirements for NR high speed | Huawei, HiSilicon | endorsed |  | - |
| R4-2015495 | TC for E-UTRAN | Huawei, HiSilicon | revised |  | R4-2017185 |
| R4-2015496 | CR on inter-frequency measurement without gap | Huawei, HiSilicon | postponed |  | - |
| R4-2015497 | Test case for Inter-frequency measurements: SA event triggered reporting tests for FR2 without gap when DRX is not used | Huawei, HiSilicon | revised |  | R4-2017216 |
| R4-2015498 | Discussion on the remaining issues on spatial relation switch | Huawei, HiSilicon | noted |  |  |
| R4-2015499 | Correction on RRC based spatial relation switch delay | Huawei, HiSilicon | agreed |  |  |
| R4-2015500 | TC for RRC based spatial relation switch associated with a known DL-RS | Huawei, HiSilicon | revised |  | R4-2017178 |
| R4-2015501 | Test cases for inter-frequency DAPS handover | Huawei, HiSilicon | agreed |  |  |
| R4-2015502 | Correction on the synchronous condition for DAPS handover | Huawei, HiSilicon | revised |  | R4-2017322 |
| R4-2015503 | Correction on SA inter-RAT measurement FR1 test case | Huawei, HiSilicon | agreed |  |  |
| R4-2015504 | CR on BWP switching delay on mulitple CCs | Huawei, HiSilicon | revised |  | R4-2017129 |
| R4-2015505 | CR on interruption due to active BWP switching on mulitple CCs | Huawei, HiSilicon | revised |  | R4-2017175 |
| R4-2015506 | Discussion on requirements maintenance for BWP switch on multiple CCs | Huawei, HiSilicon | noted |  |  |
| R4-2015507 | Discussion on performance requirements for BWP switch on multiple CCs | Huawei, HiSilicon | noted |  |  |
| R4-2015508 | CR on Link recovery for IAB-MT | Huawei, HiSilicon | withdrawn |  |  |
| R4-2015509 | CR on RLM for IAB-MT | Huawei, HiSilicon | withdrawn |  |  |
| R4-2015510 | Discussion on performance requirements for IAB | Huawei, HiSilicon | noted |  |  |
| R4-2015511 | Discussion on test cases for IAB | Huawei, HiSilicon | noted |  |  |
| R4-2015512 | CR on PUR requirements for NB-IoT | Huawei, HiSilicon | agreed |  |  |
| R4-2015513 | CR on RRM requirements for short DRX with eDRX configured for Rel-16 NB-IoT | Huawei, HiSilicon, Mediatek Inc. | revised |  | R4-2017074 |
| R4-2015514 | Draft CR on test cases for UE specific DRX cycles for Rel-16 NB-IoT | Huawei, HiSilicon | revised |  | R4-2017075 |
| R4-2015515 | Discussion on monitoring capability in cell detection for NR-U | Huawei, HiSilicon | noted |  |  |
| R4-2015516 | CR on SCell activation and deactivation requirements for NR-U | Huawei, HiSilicon | merged |  |  |
| R4-2015517 | Discussion on SCell activation and deactivation requirements for NR-U | Huawei, HiSilicon | noted |  |  |
| R4-2015518 | CR on TCI state switching requirements for NR-U | Huawei, HiSilicon | revised |  | R4-2017085 |
| R4-2015519 | CR on RLM requirements for NR-U | Huawei, HiSilicon | merged |  |  |
| R4-2015520 | CR on Beam mangement requirements for NR-U | Huawei, HiSilicon | merged |  |  |
| R4-2015521 | CR on intra-frequency measurement requirements for NR-U | Huawei, HiSilicon | agreed |  |  |
| R4-2015522 | Discussion on measurement requirements for NR-U | Huawei, HiSilicon | noted |  |  |
| R4-2015523 | CR on CSSF RSSI/CO measurement for NR-U | Huawei, HiSilicon | postponed |  |  |
| R4-2015524 | Discussion on Timing requirements for NR-U | Huawei, HiSilicon | noted |  |  |
| R4-2015525 | CR on RSSI and CO performance requirements for NR-U | Huawei, HiSilicon | merged |  |  |
| R4-2015526 | Discussion on performance requirements for RSSI measurement for NR-U | Huawei, HiSilicon | noted |  |  |
| R4-2015527 | CR on BFD and CBD requirements | Huawei, HiSilicon | merged |  |  |
| R4-2015528 | CR on BFD and CBD requirements\_R16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2015529 | CR on RRC-based BWP switch requirements | Huawei, HiSilicon | revised |  | R4-2017342 |
| R4-2015530 | CR on RRC-based BWP switch requirements\_R16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015531 | CR on RRC-based active TCI state switch test case Rel-15 | Huawei, HiSilicon | revised |  | R4-2017057 |
| R4-2015532 | CR on RRC-based active TCI state switch test case Rel-16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015533 | Update NR Frequency Band Groups to include Band n48 | Huawei, HiSilicon | agreed |  |  |
| R4-2015534 | Update NR Frequency Band Groups to include Band n65 | Huawei, HiSilicon | agreed |  |  |
| R4-2015535 | DraftCR for 38.101-1 to add BCS1 for SUL\_n78A-n80A | Huawei, HiSilicon | endorsed |  |  |
| R4-2015536 | DraftCR for 38.101-1 to add BCS1 for SUL\_n78A-n83A | Huawei, HiSilicon | endorsed |  |  |
| R4-2015537 | DraftCR for 38.101-1 to add BCS1 for SUL\_n78A-n84A | Huawei, HiSilicon | endorsed |  |  |
| R4-2015538 | DraftCR for 38.101-1 to add BCS1 for SUL\_n41A-n80A | Huawei, HiSilicon | endorsed |  |  |
| R4-2015539 | DraftCR for 38.101-1 to add BCS1 for SUL\_n79A-n80A | Huawei, HiSilicon | endorsed |  |  |
| R4-2015540 | TP for TR 37.717-00-00 to correct the notation of SUL band combinations | Huawei, HiSilicon | approved |  |  |
| R4-2015541 | TP for TR 37.717-00-00 for CA\_n1A\_SUL\_n78A-n80A | Huawei, HiSilicon | revised |  | R4-2016748 |
| R4-2015542 | TP for TR 37.717-00-00 for CA\_n1A\_SUL\_n78A-n84A | Huawei, HiSilicon | revised |  | R4-2016749 |
| R4-2015543 | TP for TR 37.717-00-00 for CA\_n41A\_SUL\_n79A-n80A | Huawei, HiSilicon | revised |  | R4-2016750 |
| R4-2015544 | TP for TR 37.717-00-00 for CA\_n79A\_SUL\_n41A-n80A | Huawei, HiSilicon | revised |  | R4-2016751 |
| R4-2015545 | DraftCR for 38.101-1 to add configuration for SUL\_n41C-n80A / SUL\_n41C-n83A / SUL\_n78C-n80A / SUL\_n78C-n84A / SUL\_n79C-n80A / SUL\_n79C-n83A | Huawei, HiSilicon | endorsed |  |  |
| R4-2015546 | To update the coversheet of Excel table based on the Rel-17 band combination basket WI | Huawei, HiSilicon | noted |  |  |
| R4-2015547 | General discussion about NTN topic | Huawei, HiSilicon | noted |  |  |
| R4-2015548 | General discussion on NTN simulation assumptions | Huawei, HiSilicon | noted |  |  |
| R4-2015549 | CR for 36.101 to clarify the SCS supports for LTE MBMS (Rel-14) | Huawei, HiSilicon | revised |  | R4-2016796 |
| R4-2015550 | CR for 36.101 to clarify the SCS supports for LTE MBMS (Rel-15) | Huawei, HiSilicon, ZTE | agreed |  |  |
| R4-2015551 | CR for 36.101 to clarify the SCS supports for LTE MBMS (Rel-16) | Huawei, HiSilicon, ZTE | agreed |  |  |
| R4-2015552 | Consideration on Cross band isolation impact with larger BW | Huawei, HiSilicon | noted |  |  |
| R4-2015553 | Discussion on spurious emission about UE co-existence between band n40 and n41 | Huawei, HiSilicon, CMCC | noted |  |  |
| R4-2015554 | CR on spurious emission about UE co-existence between band n40 and n41 | Huawei, HiSilicon, CMCC | not pursued |  |  |
| R4-2015555 | Discussion on asynchronous for DC\_42\_n79 | Huawei, HiSilicon | noted |  |  |
| R4-2015556 | Discussion on how to support EN-DC band combinations for Roaming UE | Huawei, HiSilicon | noted |  |  |
| R4-2015557 | CR for 38.101-1 to correct the notation of SUL band combinations in order to be aligned with 38.101-3 | Huawei, HiSilicon | agreed |  |  |
| R4-2015558 | Discussion and reply draft LS on structure of NR CA reference sensitivity requirements in 38.101-1 | Huawei, HiSilicon | noted |  |  |
| R4-2015559 | CR for 38.101-1 to adjust the structure of NR CA REFSENS | Huawei, HiSilicon | agreed |  |  |
| R4-2015560 | CR for 38.101-1 to adjust the structure of NR CA REFSENS (Rel-16) | Huawei, HiSilicon | agreed |  |  |
| R4-2015561 | TP for TR 37.875: adding some UE RF study for NR V2X band combinations | Huawei, HiSilicon | revised |  | R4-2016870 |
| R4-2015562 | On efficient utilization of licensed spectrum | Intel Corporation | noted |  |  |
| R4-2015563 | On numerology and channel bandwidth in 52.6 - 71 GHz | Intel Corporation | noted |  |  |
| R4-2015564 | On 60 GHz Phase noise and RF impairments | Intel Corporation | noted |  |  |
| R4-2015565 | Clarification of DC location for intra-band UL CA | Intel Corporation | noted |  |  |
| R4-2015566 | Views on Rel-16 NR UE feature list | Intel Corporation | noted |  |  |
| R4-2015567 | Work plan for NR Positioning RRM Performance part | Intel Corporation | revised |  | R4-2017158 |
| R4-2015568 | CR to TS 38.113 correcting Exclusion Bands Title, Release 15 | Ericsson Inc. | not pursued |  |  |
| R4-2015569 | CR to TS 38.113 correcting Exclusion Bands Title, Release 16 | Ericsson Inc. | withdrawn |  |  |
| R4-2015570 | CR to 38.133: Correction to SCell activation delay requirements | ZTE | postponed |  |  |
| R4-2015571 | CR to 38.133 correction to SCell activation delay requirements | ZTE | withdrawn |  |  |
| R4-2015572 | CR to 38.133: Correction to RRC based BWP switch requirements | ZTE | postponed |  |  |
| R4-2015573 | CR to 38.133 correction to RRC based BWP switch requirements | ZTE | withdrawn |  |  |
| R4-2015574 | CR to 38.133: Correction to relaxed measurement requirements | ZTE | agreed |  |  |
| R4-2015575 | CR to 38.133: Correction to relaxed measurement requirements | ZTE | revised |  | R4-2017189 |
| R4-2015576 | CR to 36.133: Correction to NR CGI reading interruption requirements | ZTE | revised |  | R4-2017190 |
| R4-2015577 | CR to 38.133: Correction to SRS carrier based switching requirements | ZTE | revised |  | R4-2017182 |
| R4-2015578 | CR to 38.133: Correction to mandatory gap pattern | ZTE | revised |  | R4-2017199 |
| R4-2015579 | CR to 36.133: Introduce requirements for mandatory gap pattern | ZTE | revised |  | R4-2017200 |
| R4-2015580 | Test case list for NR CGI reading with autonomous gaps | ZTE | noted |  |  |
| R4-2015581 | Test case list for SRS carrier based switching | ZTE | noted |  |  |
| R4-2015582 | Test case list for mandatory gap pattern | ZTE | noted |  |  |
| R4-2015583 | Draft CR on test case for SA intra-frequency CGI identification of NR neighbor cell in FR1 | ZTE | revised |  | R4-2017196 |
| R4-2015584 | Draft CR on test case for SA interruptions at NR SRS carrier based switching | ZTE | revised |  | R4-2017186 |
| R4-2015585 | Draft CR on test case for SA event triggered reporting tests with additional mandatory gap pattern | ZTE | revised |  | R4-2017340 |
| R4-2015586 | Draft CR on test case for SA CSI-RS based measurement in FR2 and CSI-RSRQ accuracy in FR2 | ZTE | revised |  | R4-2017237 |
| R4-2015587 | Remaining issues on NR EMR | ZTE | noted |  |  |
| R4-2015588 | Draft CR to reflect the completed Dual Connectivity (DC) of x bands (x=1,2,3) LTE inter-band CA (xDL1UL) and 3 bands NR inter-band CA (3DL1UL) | ZTE Corporation | withdrawn |  |  |
| R4-2015589 | CR on cleanup for LTE FeMBMS(Rel-14) | Huawei, HiSilicon | revised |  | R4-2017452 |
| R4-2015590 | CR on cleanup for LTE FeMBMS(Rel-15) | Huawei, HiSilicon | revised |  | R4-2017453 |
| R4-2015591 | CR on cleanup for LTE FeMBMS(Rel-16) | Huawei, HiSilicon | revised |  | R4-2017454 |
| R4-2015592 | Discussion on NR IAB DU demodulation performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015593 | Discussion on NR IAB MT demodulation performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015594 | Discussion on Multi-RAT Dual-Connectivity and Carrier Aggregation enhancements demodulation performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015595 | Discussion on the performance requirements for NR power saving | Huawei, HiSilicon | noted |  |  |
| R4-2015596 | CR on applicability and FRC for PDSCH normal demodulation for DL 256QAM for FR2 | Huawei, HiSilicon | endorsed |  |  |
| R4-2015597 | Discussion on PDSCH requirements for NR DL 256QAM for FR2 | Huawei, HiSilicon | noted |  |  |
| R4-2015598 | CR on SDR requirements for DL 256QAM for FR2 | Huawei, HiSilicon | revised |  | R4-2017538 |
| R4-2015599 | Discussion on SDR requirements for NR DL 256QAM for FR2 | Huawei, HiSilicon | noted |  |  |
| R4-2015600 | Summary of simulation results for SDR requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015601 | Discussion and simulation results on CQI requirements for NR DL 256QAM for FR2 | Huawei, HiSilicon | noted |  |  |
| R4-2015602 | Summary of ideal and impairment results for NR HST demodulation requirements | Huawei, HiSilicon | revised |  | R4-2017647 |
| R4-2015603 | CR on HST DPS requirements | Huawei, HiSilicon | revised |  | R4-2017540 |
| R4-2015604 | Discussion on UE performance requirements for DPS transmission scheme | Huawei, HiSilicon | noted |  |  |
| R4-2015605 | Simulation results on UE performance requirements for DPS 1a transmission scheme | Huawei, HiSilicon | noted |  |  |
| R4-2015606 | CR on HST single-tap and HST multi-path fading requirements | Huawei, HiSilicon | revised |  | R4-2017545 |
| R4-2015607 | CR on applicability rules for HST scenarios | Huawei, HiSilicon | revised |  | R4-2017548 |
| R4-2015608 | Discussion on applicability rules for different scenarios | Huawei, HiSilicon | noted |  |  |
| R4-2015609 | Simulation results on the NR HST PUSCH performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015610 | Discussion and simulation results on the UL timing adjustment | Huawei, HiSilicon | noted |  |  |
| R4-2015611 | Discussion and simulation results on NR 2-step RACH BS performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015612 | CR on BS demodulation requirements for 2-step RACH for FR2 | Huawei, HiSilicon | revised |  | R4-2017636 |
| R4-2015613 | CR on cleanup for LTE-based 5G terrestrial broadcast | Huawei, HiSilicon | revised |  | R4-2017459 |
| R4-2015614 | Discussion on high speed train deployment scenario in FR2 | Huawei, HiSilicon | noted |  |  |
| R4-2015615 | Discussion on CSI requireements with ultra low-BLER | Huawei, HiSilicon | noted |  |  |
| R4-2015616 | Simulation results on UE PDSCH demodulation reuqirements with higher BLER and low latency | Huawei, HiSilicon | noted |  |  |
| R4-2015617 | Discussion on URLLC UE demodulation requirements with higher BLER and low latency | Huawei, HiSilicon | noted |  |  |
| R4-2015618 | Discussion on URLLC BS demodulation requirements with higher BLER and low latency | Huawei, HiSilicon | noted |  |  |
| R4-2015619 | Simulation results on PUSCH demodulation reuqirements with higher BLER and low latency | Huawei, HiSilicon | noted |  |  |
| R4-2015620 | CR to TS 38.101-4: Addition of UE performance requirements for FR1 URLLC PDSCH repetitions over multiple slots | Huawei, HiSilicon | revised |  | R4-2017511 |
| R4-2015621 | CR to TS 38.101-4: Applicability rules for URLLC CSI requirements | Huawei, HiSilicon | revised |  | R4-2017498 |
| R4-2015622 | CR to TS 38.101-4: Applicability rules for URLLC UE demodulation requirements | Huawei, HiSilicon | revised |  | R4-2017515 |
| R4-2015623 | CR to TS 38.104: Addition of BS performance requirements for URLLC PUSCH repetition Type A | Huawei, HiSilicon | revised |  | R4-2017527 |
| R4-2015624 | CR to TS 38.141-1: Addition of BS conformance testing for URLLC demodulation requirements with higher BLER | Huawei, HiSilicon | revised |  | R4-2017528 |
| R4-2015625 | CR to TS 38.141-1: Applicability of URLLC BS demodulation requirements | Huawei, HiSilicon | revised |  | R4-2017521 |
| R4-2015626 | CR to TS 38.141-2: Addition of BS conformance testing for FR2 URLLC PUSCH repetition Type A | Huawei, HiSilicon | revised |  | R4-2017522 |
| R4-2015627 | CR to TS 38.141-2: FRC for FR1 URLLC BS performance requirements | Huawei, HiSilicon | revised |  | R4-2017506 |
| R4-2015628 | Summary of simulation results for UE URLLC demodulation performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015629 | Summary of simulation results for BS URLLC demodulation performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015630 | CR: Updates to LTE V2X performance requirements | Huawei, HiSilicon | agreed |  |  |
| R4-2015631 | CR: Cleanup for NPDSCH performance requirements for multi-TB interleaved transmission in TS 36.101 | Huawei, HiSilicon | revised |  | R4-2017457 |
| R4-2015632 | CR: Addition of NPUSCH format1 performance requirements for multi-TB interleaved transmission in TS 36.104 | Huawei, HiSilicon | agreed |  |  |
| R4-2015633 | CR: Cleanup for NPUSCH format 1 conformance testing for multi-TB interleaved transmission in TS 36.141 | Huawei, HiSilicon | agreed |  |  |
| R4-2015634 | Discussion on NR-U PDSCH performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015635 | Discussion on NR-U PDCCH performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015636 | Discussion on NR-U CSI requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015637 | Discussion on NR-U PUSCH performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015638 | Discussion on NR-U PUCCH performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015639 | Discussion on NR-U PRACH performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015640 | Discussion on performance requirements for NR V2X single-link test | Huawei, HiSilicon | noted |  |  |
| R4-2015641 | Simulation results for NR V2X single-link test | Huawei, HiSilicon | noted |  |  |
| R4-2015642 | Discussion on performance requirements for NR V2X multi-link test | Huawei, HiSilicon | noted |  |  |
| R4-2015643 | Draft CR: Introduce power imbalance with two links test for NR sidelink | Huawei, HiSilicon | postponed |  |  |
| R4-2015644 | Draft CR: Introduce PSCCH/PSSCH decoding capability test for NR sidelink | Huawei, HiSilicon | postponed |  |  |
| R4-2015645 | Draft CR: PSFCH decoding capability test for NR sidelink | Huawei, HiSilicon | postponed |  |  |
| R4-2015646 | Discussion on the test setup of (e)Type II codebook based PMI reporting test | Huawei, HiSilicon | noted |  |  |
| R4-2015647 | Simulation results for SU-MIMO eType II codebook based PMI reporting test | Huawei, HiSilicon | noted |  |  |
| R4-2015648 | Discussion on left open issues of PDSCH performance requirements for multi/single-DCI transmission scheme | Huawei, HiSilicon | noted |  |  |
| R4-2015649 | Simulation results of PDSCH requirements for Multi-DCI transmission scheme | Huawei, HiSilicon | noted |  |  |
| R4-2015650 | Simulaiton results of PDSCH requirements for Single-DCI SDM scheme | Huawei, HiSilicon | noted |  |  |
| R4-2015651 | Discussion on PDSCH performance reuqirements for Multi-TRP URLLC schemes | Huawei, HiSilicon | noted |  |  |
| R4-2015652 | Simulation results of PDSCH requirements for Single-DCI URLLC schemes | Huawei, HiSilicon | noted |  |  |
| R4-2015653 | DraftCR for 38.101-4: Introduction of PDSCH requirement with Single-DCI based SDM scheme | Huawei, HiSilicon | revised |  | R4-2017532 |
| R4-2015654 | DraftCR for 38.101-4: Introduction of PDSCH requirement with Multi-DCI based transmission scheme | Huawei, HiSilicon | revised |  | R4-2017533 |
| R4-2015655 | Discussion on PDSCH CA normal demodulation requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015656 | CR: Introduction of performance requirements for NR FR1 PDSCH CA with 4Rx | Huawei, HiSilicon | revised |  | R4-2017568 |
| R4-2015657 | Simulaiton results for Type II codebook PMI reporting test | Huawei, HiSilicon | noted |  |  |
| R4-2015658 | Discussion on the open issue of PMI reporting test with larger Tx ports | Huawei, HiSilicon | noted |  |  |
| R4-2015659 | CR for TS 38.101-4: Applicability for NR PMI requirements with Tx ports larger than 8 and up to 32 | Huawei, HiSilicon | endorsed |  |  |
| R4-2015660 | Discussion on UE power imbalance requirements for FR1 CA and EN-DC | Huawei, HiSilicon | noted |  |  |
| R4-2015661 | CR: Addition of power imbalance requirements for intra-band contiguous CA and intra-band EN-DC | Huawei, HiSilicon | revised |  | R4-2017572 |
| R4-2015662 | Discussion on CA CQI reporting requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015663 | Discussion on release independence for NR performance requirements enhancements | Huawei, HiSilicon | noted |  |  |
| R4-2015664 | CR for 38.104: Introduction of performance requirements for NR HST PRACH under fading channel | Huawei, HiSilicon | revised |  | R4-2017554 |
| R4-2015665 | CR for 38.141-1: Introduction of conformance testing for NR HST PRACH under fading channel | Huawei, HiSilicon | withdrawn |  |  |
| R4-2015666 | CR for 38.141-2: Introduction of conformance testing for NR HST PRACH under fading channel | Huawei, HiSilicon | withdrawn |  |  |
| R4-2015667 | Simulation results for NR HST PRACH format 0 with restricted set A and B under fading channel | Huawei, HiSilicon | noted |  |  |
| R4-2015668 | CR for 36.101: Cleanup for performance requirements of sTTI (Rel-15) | Huawei, HiSilicon | revised |  | R4-2017455 |
| R4-2015669 | CR for 36.101: Cleanup for performance requirements of sTTI (Rel-16) | Huawei, HiSilicon | revised |  | R4-2017456 |
| R4-2015670 | New objectives for Rel-17 demodulation performance work item | Huawei, HiSilicon | not treated |  |  |
| R4-2015671 | [CR] NR Perf Maintenance R16 Cat F | ZTE Corporation | agreed |  |  |
| R4-2015672 | [CR] Specify RRC processing delay in TCI state switching delay | ZTE Corporation | agreed |  |  |
| R4-2015673 | [CR] Specify RRC processing delay in TCI state switching delay (Cat A) | ZTE Corporation | agreed |  |  |
| R4-2015674 | [CR] NR Perf Maintenance R15 Cat F | ZTE Corporation | revised |  | R4-2017058 |
| R4-2015675 | TR 38.921 V 0.2.0 | Huawei, HiSilicon | agreed |  |  |
| R4-2015676 | TP on UE IMT technology related parameters | Huawei, HiSilicon | noted |  |  |
| R4-2015677 | TP on BS remaining parameters | Huawei, HiSilicon | noted |  |  |
| R4-2015678 | Simulation results on DL co-existence for 6.425-7.125GHz, 10.0-10.5 GHz | Huawei, HiSilicon | noted |  |  |
| R4-2015679 | Simulation results on UL co-existence for 6.425-7.125GHz, 10.0-10.5 GHz | Huawei, HiSilicon | noted |  |  |
| R4-2015680 | TP on spatial emission and interference mitigation | Huawei, HiSilicon | revised |  | R4-2016907 |
| R4-2015681 | Draft reply LS on Parameters of terrestrial component of IMT for sharing and compatibility studies in preparation for WRC-23 (6.425 to 10.5 GHz) | Huawei, HiSilicon | noted |  |  |
| R4-2015682 | CR to TS 38.101-1: introduction of NR band n13 | Huawei, HiSilicon | revised |  | R4-2016878 |
| R4-2015683 | CR to TS 38.133: introduction of NR band n13 | Huawei, HiSilicon | agreed |  |  |
| R4-2015684 | CR to TS 38.104: introduction of NR band n13 | Huawei, HiSilicon | agreed |  |  |
| R4-2015685 | CR to TS 38.141-1: introduction of NR band n13 | Huawei, HiSilicon | agreed |  |  |
| R4-2015686 | CR to TS 38.141-2: introduction of NR band n13 | Huawei, HiSilicon | agreed |  |  |
| R4-2015687 | CR to TS 36.104: introduction of NR band n13 | Huawei, HiSilicon | agreed |  |  |
| R4-2015688 | CR to TS 36.141: introduction of NR band n13 | Huawei, HiSilicon | agreed |  |  |
| R4-2015689 | CR to TS 37.104: introduction of NR band n13 | Huawei, HiSilicon | agreed |  |  |
| R4-2015690 | CR to TS 37.141: introduction of NR band n13 | Huawei, HiSilicon | agreed |  |  |
| R4-2015691 | CR to TS 37.105: introduction of NR band n13 | Huawei, HiSilicon | agreed |  |  |
| R4-2015692 | CR to TS 37.145-1: introduction of NR band n13 | Huawei, HiSilicon | agreed |  |  |
| R4-2015693 | CR to TS 37.145-2: introduction of NR band n13 | Huawei, HiSilicon | agreed |  |  |
| R4-2015694 | On remaining issues for system parameters | Huawei, HiSilicon | noted |  |  |
| R4-2015695 | On remaining issues for BS TX | Huawei, HiSilicon | noted |  |  |
| R4-2015696 | On remaining issues for BS RX | Huawei, HiSilicon | noted |  |  |
| R4-2015697 | A-MPR evaluation for NR-U | Huawei, HiSilicon | noted |  |  |
| R4-2015698 | CR for TS 38.104: Corrections for NR-U | Huawei, HiSilicon | not pursued |  |  |
| R4-2015699 | Reference measurement channels for 70 MHz CBW | Huawei, HiSilicon | agreed |  |  |
| R4-2015700 | Discussion on 52.6 GHz to 71 GHz SI | Huawei, HiSilicon | noted |  |  |
| R4-2015701 | Discussion on release independence | Huawei, HiSilicon | noted |  |  |
| R4-2015702 | Draft CR for TS 38.101: introduction of channel bandwidths 35MHz and 45MHz for general part | Huawei, HiSilicon | not pursued |  |  |
| R4-2015703 | CR for TS 38.104: draft CR on introduction of channel bandwidths 35MHz and 45MHz for BS TX and general part | Huawei, HiSilicon | not pursued |  | R4-2016866 |
| R4-2015704 | TR 37.717-21-11 V0.2.0 for DC of 2 LTE band and 1 NR band | Huawei, HiSilicon | agreed |  |  |
| R4-2015705 | Revised WID: Dual Connectivity (DC) of 2 bands LTE inter-band CA (2DL/1UL) and 1 NR band (1DL/1UL) | Huawei, HiSilicon | endorsed |  |  |
| R4-2015706 | CR on introduction of completed EN-DC of 2 bands LTE and 1 band NR from RAN4#96e and RAN4#97e into TS 38.101-3 | Huawei, HiSilicon | agreed |  |  |
| R4-2015707 | TP for TR 38.717-03-01: CA\_n66-n71-n78 | Huawei, HiSilicon, Bell Mobility, Telus | approved |  |  |
| R4-2015708 | TP for TR 38.717-03-01: CA\_n38-n66-n78 | Huawei, HiSilicon, Bell Mobility, Telus | approved |  |  |
| R4-2015709 | TP for TR 38.717-03-01: CA\_n25-n38-n78 | Huawei, HiSilicon, Bell Mobility, Telus | approved |  |  |
| R4-2015710 | TP for TR 37.717-21-11: DC\_2-7\_n77 | Huawei, HiSilicon, Bell Mobility, Telus | approved |  |  |
| R4-2015711 | TP for TR 37.717-21-11: DC\_7-66\_n77 | Huawei, HiSilicon, Bell Mobility, Telus | approved |  |  |
| R4-2015712 | TP for TR 37.717-31-11: DC\_2-7-66\_n77 | Huawei, HiSilicon, Bell Mobility, Telus | approved |  |  |
| R4-2015713 | Overlapping UE channel bandwidths | Huawei, HiSilicon | noted |  |  |
| R4-2015714 | CR to TR 37.941: Removal of Square Brackets | Ericsson | not pursued |  |  |
| R4-2015715 | CR to TR 37.941: Removal of Square Brackets | Ericsson | withdrawn |  |  |
| R4-2015716 | CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics | Ericsson | not pursued |  | - |
| R4-2015717 | CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics | Ericsson | withdrawn |  |  |
| R4-2015718 | Draft CR to TS 38.104: Introduction of CBWs 35 MHz and 45 MHz | Ericsson | not pursued |  |  |
| R4-2015719 | Draft CR to TS 38.141-1: Introduction of CBWs 35 MHz and 45 MHz | Ericsson | not pursued |  | R4-2016867 |
| R4-2015720 | Draft CR to TS 38.141-2: Introduction of CBWs 35 MHz and 45 MHz | Ericsson | not pursued |  |  |
| R4-2015721 | Work Plan for Study on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidth | Ericsson | revised |  | R4-2016929 |
| R4-2015722 | TR Skeleton on CH BW not aligned with existing BWs | Ericsson | revised |  | R4-2016930 |
| R4-2015723 | Considerations on Bandwidth Granularity | Ericsson | noted |  |  |
| R4-2015724 | Utilizing larger CBWs for available spectrum | Ericsson | noted |  |  |
| R4-2015725 | Discussion on remaining NR-U BS RF Requirements | Ericsson | noted |  |  |
| R4-2015726 | CR to TS 38.104: Removal of | Ericsson | not pursued |  |  |
| R4-2015727 | On 52.6 to 71 GHz numerology evaluation and channel bandwidths | Ericsson | noted |  |  |
| R4-2015728 | Discussion on PTRS for 52 beyond | Ericsson | noted |  |  |
| R4-2015729 | CR to TS 38.101-3 corrections on inter-band EN-DC configurations including FR1 and FR2 | CHTTL | agreed |  |  |
| R4-2015730 | Initial discussion on NTN RRM requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015731 | CR to remove intra-frequency ECID requirements for NE-DC 36133 R15 | Huawei, HiSilicon | postponed |  | - |
| R4-2015732 | CR to remove intra-frequency ECID requirements for NE-DC 36133 R16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2015733 | CR to remove inter-RAT ECID requirements for NE-DC 38133 R15 | Huawei, HiSilicon | revised |  | R4-2017344 |
| R4-2015734 | CR to remove inter-RAT ECID requirements for NE-DC 38133 R16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2015735 | Discussion on remaining issues in Rel-15 SCell activation requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015736 | CR on SCell activation requirements R15 | Huawei, HiSilicon | revised |  | R4-2017036 |
| R4-2015737 | CR on SCell activation requirements R16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015738 | CR on FR2 unkown SCell activation test cases R15 | Huawei, HiSilicon | agreed |  |  |
| R4-2015739 | CR on FR2 unkown SCell activation test cases R16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015740 | CR on BWP in L1-RSRP delay and accuracy test cases R15 | Huawei, HiSilicon | agreed |  |  |
| R4-2015741 | CR on BWP in L1-RSRP delay and accuracy test cases R16 | Huawei, HiSilicon | agreed |  |  |
| R4-2015742 | Discussion on remaining issues in EMR requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015743 | CR on EMR requirements in 36.133 | Huawei, HiSilicon, MediaTek | revised |  | R4-2017121 |
| R4-2015744 | Discussion on remaining issues in SCell dormancy and cross-carrier scheduled BWP switching | Huawei, HiSilicon | noted |  |  |
| R4-2015745 | CR on BWP switching and SCell dormancy | Huawei, HiSilicon | revised |  | R4-2017125 |
| R4-2015746 | Discussion on accuracy requirements for EMR | Huawei, HiSilicon | noted |  |  |
| R4-2015747 | draftCR to introduce accuracy requirements for EMR 38.133 | Huawei, HiSilicon | postponed |  |  |
| R4-2015748 | draftCR to introduce accuracy for EMR 36.133 | Huawei, HiSilicon | revised |  | R4-2017327 |
| R4-2015749 | Discussion on RRM test for MR-DC enhancement | Huawei, HiSilicon | noted |  |  |
| R4-2015750 | Discussion on remaining issues for RSTD measurement requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015751 | CR to update RSTD measurement requirements | Huawei, HiSilicon | merged |  |  |
| R4-2015752 | Discussison on remaining issues for PRS-RSRP measurement requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015753 | CR to update PRS-RSRP measurement requirements | Huawei, HiSilicon | revised |  | R4-2017145 |
| R4-2015754 | Discussison on remaining issues for UE Rx-Rx time difference measurement requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015755 | CR to update UE Rx-Tx time difference measurement requirements | Huawei, HiSilicon | merged |  |  |
| R4-2015756 | Discussion on remaining issues in CSSF for PRS measurement | Huawei, HiSilicon | noted |  |  |
| R4-2015757 | CR on CSSF for PRS measurement | Huawei, HiSilicon | merged |  |  |
| R4-2015758 | CR to introduce new measurement gap patterns for positioning in 36.133 | Huawei, HiSilicon | revised |  | R4-2017148 |
| R4-2015759 | Discussion on accuracy requirements for RSTD measurement | Huawei, HiSilicon | noted |  |  |
| R4-2015760 | draftCR to introduce accuracy requirements for RSTD measurement | Huawei, HiSilicon | revised |  | R4-2017153 |
| R4-2015761 | Discussion on accuracy requirements for PRS-RSRP measurement | Huawei, HiSilicon | noted |  |  |
| R4-2015762 | draftCR to introduce accuracy requirements for PRS-RSRP measurement | Huawei, HiSilicon | merged |  |  |
| R4-2015763 | Discussion on accuracy requirements for UE Rx-Tx time difference measurement | Huawei, HiSilicon | noted |  |  |
| R4-2015764 | draftCR to introduce accuracy requirements for UE Rx-Tx time difference measurement | Huawei, HiSilicon | merged |  |  |
| R4-2015765 | Discussion on RRM test case for UE positioning requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015766 | draftCR on PRS RMC for positioning test cases | Huawei, HiSilicon | merged |  |  |
| R4-2015767 | Discussion on the scope gNB requirements for NR positioning | Huawei, HiSilicon, CMCC | noted |  |  |
| R4-2015768 | Discussion on gNB positioning measurement requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015769 | System and link level simulation results for gNB measurement requirements | Huawei, HiSilicon | noted |  |  |
| R4-2015770 | draftCR to introduce accuracy requirements for gNB positioning measurement | Huawei, HiSilicon | postponed |  |  |
| R4-2015771 | Discussion on remaining issues in multiple SCell activation | Huawei, HiSilicon | noted |  |  |
| R4-2015772 | CR on SCell activation requirements | Huawei, HiSilicon | postponed |  | - |
| R4-2015773 | draftCR to introduce multiple SCell activation TC2 | Huawei, HiSilicon | revised |  | R4-2017212 |
| R4-2015774 | CR on CGI reading requirements 38.133 | Huawei, HiSilicon | revised |  | R4-2017191 |
| R4-2015775 | CR on CGI reading requirements 36.133 | Huawei, HiSilicon | revised |  | R4-2017192 |
| R4-2015776 | draftCR on TC for EN-DC inter-frequency CGI identification of NR neighbor cell in FR2 | Huawei, HiSilicon | revised |  | R4-2017197 |
| R4-2015777 | draftCR on TC for UE specific CBW change on FR2 NR PSCell in EN-DC | Huawei, HiSilicon | revised |  | R4-2017219 |
| R4-2015778 | [LS] Discussion on remaining issues in RSS measurement and eMTC in RRC\_Inactive state | Huawei, HiSilicon | noted |  |  |
| R4-2015779 | CR on RSS measurement requirements | Huawei, HiSilicon | revised |  | R4-2017068 |
| R4-2015780 | CR to introduce measurement requirements for eMTC in RRC\_Inactive | Huawei, HiSilicon | revised |  | R4-2017069 |
| R4-2015781 | draftCR to introduce RSS related test cases | Huawei, HiSilicon | endorsed |  |  |
| R4-2015782 | CR on CSI-RS capability requirements and time restriction | Huawei, HiSilicon | merged |  |  |
| R4-2015783 | Discussion on CSI-RSRP accuracy and report mapping | Huawei, HiSilicon | noted |  |  |
| R4-2015784 | CR to introduce CSI-RSRP accuracy requirements and report mapping | Huawei, HiSilicon | merged |  |  |
| R4-2015785 | Discussion on CSI-RSRQ accuracy requirements and report mapping | Huawei, HiSilicon | noted |  |  |
| R4-2015786 | CR to introduce CSI-RSRQ accuracy requirements and report mapping | Huawei, HiSilicon | merged |  |  |
| R4-2015787 | Discussion on CSI-SINR accuracy requirements and report mapping | Huawei, HiSilicon | noted |  |  |
| R4-2015788 | CR to introduce CSI-SINR accuracy requirements and report mapping | Huawei, HiSilicon | revised |  | R4-2017321 |
| R4-2015789 | CR to introduce TC for CSI-SINR measurement accuracy for FR1 SA and FR2 EN-DC | Huawei, HiSilicon | revised |  | R4-2017313 |
| R4-2015790 | CR on Link recovery for IAB-MT | Huawei, HiSilicon | merged |  |  |
| R4-2015791 | CR on RLM for IAB-MT | Huawei, HiSilicon | merged |  |  |
| R4-2015792 | [CR] Specify RRC processing delay in TCI state switching delay for R16 NR-U | ZTE Corporation | agreed |  |  |
| R4-2015793 | Discussion on release independent of FDD-TDD EN-DC High Power UE | CHTTL | noted |  |  |
| R4-2015794 | Band 24 Cat M1/M2 A-MPR assumptions | Ligado Networks | noted |  |  |
| R4-2015795 | Discussion on handling the cross band isolation requirement for larger channel BW in Rel.16 | CHTTL | noted |  |  |
| R4-2015796 | CR to correct MSD of DC\_1A-41A\_n77A | KDDI Corporation | agreed |  |  |
| R4-2015797 | CR to correct MSD of DC\_1A-41A\_n77A | KDDI Corporation | agreed |  |  |
| R4-2015798 | On NRU operation modes and capabilities | LG Electronics Finland | noted |  |  |
| R4-2015799 | UE Reference Sensitivity considerations for band n96 | Charter Communications, Inc | noted |  |  |
| R4-2015800 | Specification impact of additional 35 | Skyworks Solutions Inc. | noted |  |  |
| R4-2015801 | Specification impact of additional 35&45MHz channel bandwidths | Skyworks Solutions Inc. | withdrawn |  |  |
| R4-2015802 | TP for TR 37.717-11-31: support of DC\_3\_n1-n78-n257, DC\_3-3\_n1-n78-n257, DC\_7\_n1-n78-n257, DC\_7-7\_n1-n78-n257 | CHTTL | approved |  |  |
| R4-2015803 | CR to add NR-DC\_n48-n46 combinations | Charter Communications, Inc | revised |  | R4-2016802 |
| R4-2015804 | Correction of CR0972 implementation | ETSI MCC | agreed |  |  |
| R4-2015805 | Correction of CR0325 implementation | ETSI MCC | agreed |  |  |
| R4-2015806 | TP for TR 37.717-11-31: support of DC\_3-7\_n1-n78-n257, DC\_3-3-7\_n1-n78-n257, DC\_3-7-7\_n1-n78-n257, DC\_3-3-7-7\_n1-n78-n257 | CHTTL | approved |  |  |
| R4-2015807 | Test frequencies for NB-IOT UE in standalone operation | Sony | noted |  |  |
| R4-2015808 | Remaining issues in beam correspondence | Sony, Ericsson | noted |  |  |
| R4-2015809 | Views on RF requirement for FWA | Sony, Ericsson | noted |  |  |
| R4-2015810 | Draft CR: RMC of MsgA for 2-step RACH test | Ericsson | revised |  | R4-2017259 |
| R4-2015811 | Draft CR: Introduction of 2-step RACH CFRA tests | Ericsson | revised |  | R4-2017260 |
| R4-2015812 | PDSCH demodulation requirements for HST-DPS | Ericsson | noted |  |  |
| R4-2015813 | Simulation results of PDSCH with HST-SFN | Ericsson | noted |  |  |
| R4-2015814 | Applicability rule for PDSCH demodulation requirements in HST WI | Ericsson | noted |  |  |
| R4-2015815 | UE demodulation requirements for WI on MR-DC and CA enhancements | Ericsson | noted |  |  |
| R4-2015816 | Test cases of MSG3 channel quality report on non-anchor carrier | Ericsson | noted |  |  |
| R4-2015817 | Draft CR: MSG3 based channel quality reporting on non-anchor carrier | Ericsson | revised |  | R4-2017076 |
| R4-2015818 | Open issues on beam management for NR-U | Ericsson | noted |  |  |
| R4-2015819 | CR: Beam management requirements with CCA | Ericsson | revised |  | R4-2017087 |
| R4-2015820 | PDSCH demodulation requirements with power imbalanced condition | Ericsson | noted |  |  |
| R4-2015821 | CA CQI reporting requirements | Ericsson | noted |  |  |
| R4-2015822 | Release independent requirements for Rel-16 performance requirement enhancement | Ericsson | noted |  |  |
| R4-2015823 | CR: Correction of CFRA test in FR2 SA | Ericsson | agreed |  |  |
| R4-2015824 | CR: Correction of FRC for PDSCH demodulation requirements | Ericsson | not pursued |  | - |
| R4-2015825 | CR: Correction of FRC for PDSCH demodulation requirements | Ericsson | withdrawn |  |  |
| R4-2015826 | CR: Clarification of L1-SINR reporting with CSI-RS based CMR and dedicated IMR configured | Ericsson | revised |  | R4-2017165 |
| R4-2015827 | Simulation results of L1-SINR measurement accuracy | Ericsson | noted |  |  |
| R4-2015828 | Link recovery test with link recovery requests | Ericsson | noted |  |  |
| R4-2015829 | Draft CR: Introduction of test case of link recovery with link recovery requests | Ericsson | revised |  | R4-2017171 |
| R4-2015830 | Draft CR: PDSCH FRC for eMIMO sDCI/mDCI-based SDM transmission | Ericsson | revised |  | R4-2017650 |
| R4-2015831 | Simulation results of single-DCI based SDM transmission | Ericsson | noted |  |  |
| R4-2015832 | PDSCH requirements for mDCI/sDCI-based SDM transmission | Ericsson | noted |  |  |
| R4-2015833 | Simulation results of multi-DCI based SDM transmission | Ericsson | noted |  |  |
| R4-2015834 | Discussion on sDCI-based FDM/TDM transmission schemes | Ericsson | noted |  |  |
| R4-2015835 | CR: Addition of applicability for MTC UE capable of 64QAM DL | Ericsson | agreed |  |  |
| R4-2015836 | Clean up of enhanced MPDCCH demodulation requirements | Ericsson | agreed |  |  |
| R4-2015837 | Clean up of CSI-RS based PMI reporting test for non-BL UEs | Ericsson | revised |  | R4-2017458 |
| R4-2015838 | CR: Correction of eMTC early-OOS/early-IS tests (Rel-14) | Ericsson | revised |  | R4-2017064 |
| R4-2015839 | CR: Correction of eMTC early-OOS/early-IS tests | Ericsson | revised |  | R4-2017065 |
| R4-2015840 | CR: Correction of eMTC early-OOS/early-IS tests | Ericsson | withdrawn |  |  |
| R4-2015841 | Test cases of RLM for MPDCCH performance improvement | Ericsson | noted |  |  |
| R4-2015842 | Draft CR: Test cases of RLM for MPDCCH performance improvement | Ericsson | revised |  | R4-2017072 |
| R4-2015843 | Adding MCS12 and 30% throughput requirements and corresponding FRC tables for FR2 PUSCH performance in TS38.104 v15.11.0 | Ericsson | not pursued |  |  |
| R4-2015844 | Adding MCS12 and 30% throughput requirements and corresponding FRC tables for FR2 PUSCH performance in TS38.141-2 v15.7.0 | Ericsson | not pursued |  |  |
| R4-2015845 | Adding FRC table description in Annex in TS38.104 v16.5.0 | Ericsson | revised |  | R4-2017574 |
| R4-2015846 | Additional test cases and FRC tables for HST PUSCH | Ericsson | revised |  | R4-2017553 |
| R4-2015847 | discussion on HST UL TA remain issues | Ericsson | noted |  |  |
| R4-2015848 | additional simulation results for UL TA | Ericsson | noted |  |  |
| R4-2015849 | simulation results for HST PRACH under fading channel | Ericsson | noted |  |  |
| R4-2015850 | simulation results for HST PUSCH under fading channel | Ericsson | noted |  |  |
| R4-2015851 | discussion on general issues in NR-U performance requirements | Ericsson | noted |  |  |
| R4-2015852 | discussion on NR-U PUSCH demodulation assumptions | Ericsson | noted |  |  |
| R4-2015853 | discussion on NR-U PUCCH demodulation assumptions | Ericsson | noted |  |  |
| R4-2015854 | discussion on NR-U PRACH demodulation assumptions | Ericsson | noted |  |  |
| R4-2015855 | Link budget for PC3 for n262 | Sony, Ericsson | noted |  |  |
| R4-2015856 | CR to TS 38.307 on release independent update for the Rel.16 EN-DC and NR CA/DC | CHTTL, ZTE Corporation, Dish, SGS Wireless | revised |  | R4-2016848 |
| R4-2015857 | 2-step RACH open issues | Ericsson | noted |  |  |
| R4-2015858 | 2-step RACH simulation results | Ericsson | noted |  |  |
| R4-2015859 | General considerations for FR2 HST | Ericsson | noted |  |  |
| R4-2015860 | Deployment scenarios for FR2 HST | Ericsson | noted |  |  |
| R4-2015861 | Summary of ideal and impairment results for ultra-low BLER BS | Ericsson | revised |  | R4-2017500 |
| R4-2015862 | Summary of ideal and impairment results for ultra-low BLER UE | Ericsson | revised |  | R4-2017495 |
| R4-2015863 | On 0.001%BLER CQI test | Ericsson | noted |  |  |
| R4-2015864 | Simulation results on URLLC UE CQI reporting requirements for CQI table 3 | Ericsson | noted |  |  |
| R4-2015865 | BS demodulation parameters | Ericsson | noted |  |  |
| R4-2015866 | Simulation results for BS high BLER URLLC | Ericsson | noted |  |  |
| R4-2015867 | Base station ultra-low BLER simulation results | Ericsson | noted |  |  |
| R4-2015868 | On IAB testing approach | Ericsson | noted |  |  |
| R4-2015869 | IAB-MT demodulation requirements | Ericsson | noted |  |  |
| R4-2015870 | IAB-DU demodulation requirements | Ericsson | noted |  |  |
| R4-2015871 | Views on testability enhancement for UE FR2 test | Sony, Ericsson | noted |  |  |
| R4-2015872 | Views on testability enhancement for UE FR2 test | Sony, Ericsson | withdrawn |  |  |
| R4-2015873 | Views on Feasibility for CA configurations within same frequency group based on IBM | Sony, Ericsson | noted |  |  |
| R4-2015874 | Views on Feasibility for CA configurations between different frequency groups based on CBM | Sony, Ericsson | noted |  |  |
| R4-2015875 | Views on Rel-17 inter-band DL CA in FR2 | Sony, Ericsson | noted |  |  |
| R4-2015876 | Introducing reference to the source of the Lmax and NRLM. | Nokia, Nokia Shanghai Bell | revised |  | R4-2017338 |
| R4-2015877 | Introducing reference to the source of the Lmax and NRLM. | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2015878 | Correcting the range of Lmax=8 for unpaired spectrum | Nokia, Nokia Shanghai Bell | postponed |  |  |
| R4-2015879 | CR on performance requirements tests for euCA. | Nokia, Nokia Shanghai Bell | revised |  | R4-2017062 |
| R4-2015880 | TR skeleton for NR support for high speed train scenario in FR2 | Nokia, Nokia Shanghai Bell | revised |  | R4-2016922 |
| R4-2015881 | Early Measurement Reporting | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015882 | CR on UE requirement for MR-DC early measurement reporting in 36.133 | Nokia, Nokia Shanghai Bell | merged |  |  |
| R4-2015883 | CR on UE requirement for MR-DC early measurement reporting in 38.133 | Nokia, Nokia Shanghai Bell | revised |  | R4-2017120 |
| R4-2015884 | Discussion on test cases for MD-DC EMR | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015885 | RRC based spatial relation switch associated with a known DL-RS in SA | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2015886 | Views on numerologies above 52 GHz | Sony | noted |  |  |
| R4-2015887 | Views on UE RF requirements of new FWA with 23dBm maximum TRP | Intel Corporation | noted |  |  |
| R4-2015888 | PC3 minimum peak EIRP and EIS requirements for band n262 | Intel Corporation | noted |  |  |
| R4-2015889 | CR to 38.101-1 Introduce band combination requirements for PC2 CA\_n1A-n78A | China Telecom, ZTE, Huawei, HiSilicon, CATT | agreed |  |  |
| R4-2015890 | Views on numerologies above 52 GHz | Sony | noted |  |  |
| R4-2015891 | Views on numerologies above 52 GHz | Sony | withdrawn |  |  |
| R4-2015892 | Views on numerologies above 52 GHz | Sony | withdrawn |  |  |
| R4-2015893 | Views on numerologies above 52 GHz | Sony | withdrawn |  |  |
| R4-2015894 | Link budget for PC3 for n262 | Sony, Ericsson | withdrawn |  |  |
| R4-2015895 | Views on testability enhancement for UE FR2 test | Sony, Ericsson | withdrawn |  |  |
| R4-2015896 | Link budget for PC3 for n262 | Sony, Ericsson | withdrawn |  |  |
| R4-2015897 | SI on IMT parameters - DL simulations results | Ericsson | noted |  |  |
| R4-2015898 | SI on IMT parameters - UL simulations results | Ericsson | noted |  |  |
| R4-2015899 | SI on IMT parameters - Remaining BS parameters | Ericsson | noted |  |  |
| R4-2015900 | SI on IMT parameters - Remaining UE parameters | Ericsson | noted |  |  |
| R4-2015901 | SI on IMT parameters - Simulation assumptions | Ericsson | noted |  |  |
| R4-2015902 | TR 38.847 Introduction of NR Band 262 (47Ghz band) | Ericsson | agreed |  |  |
| R4-2015903 | Draft CR to TS 38.104 | Ericsson | revised |  | R4-2016882 |
| R4-2015904 | BS RF requirements and system parameters - TP to TR 38.847 | Ericsson | revised |  | R4-2016883 |
| R4-2015905 | Specification structure for NTN nodes | Ericsson | noted |  |  |
| R4-2015906 | NTN Scenarios and Regulatory overview | Ericsson | noted |  |  |
| R4-2015907 | NTN Simulations discussion | Ericsson | noted |  |  |
| R4-2015908 | NTN coexistence - BS requirements aspects | Ericsson | noted |  |  |
| R4-2015909 | New WI: Specification of band n67 | Ericsson | not treated |  |  |
| R4-2015910 | Revised RP-201294 - Basket WID on adding channel bandwidth support to existing NR bands | Ericsson | revised |  | R4-2016858 |
| R4-2015911 | Big CR to 38.104 - Additional Channel BW | Ericsson | revised |  | R4-2016859 |
| R4-2015912 | Big CR to 38.101-1 - Additional Channel BW | Ericsson | revised |  | R4-2016860 |
| R4-2015913 | NTN use case scenarios and architectures | THALES | noted |  |  |
| R4-2015914 | Correction to supported channel bandwidths per SUL\_n41A-n81A | Keysight Technologies UK Ltd | agreed |  |  |
| R4-2015915 | Possible FR1 exemplary band for NR satellite networks | THALES | noted |  |  |
| R4-2015916 | Revised WID NR Intra-band Rel-17 | Ericsson | endorsed |  |  |
| R4-2015917 | Revised WID LTE 3DL and one NR band Rel-17 | Ericsson | endorsed |  |  |
| R4-2015918 | Revised WID 4 bands NR CA Rel-17 | Ericsson | endorsed |  |  |
| R4-2015919 | CR introduction completed band combinations Rel-17 NR Intra-band - | Ericsson | agreed |  |  |
| R4-2015920 | CR introduction completed band combinations Rel-17 NR Intra-band - | Ericsson | agreed |  |  |
| R4-2015921 | CR introduction completed band combinations LTE 3DL and one NR band - | Ericsson | agreed |  |  |
| R4-2015922 | CR introduction completed band combinations NR Inter-band 4 bands CA - | Ericsson | agreed |  |  |
| R4-2015923 | CR introduction completed band combinations NR Inter-band 4 bands CA - | Ericsson | agreed |  |  |
| R4-2015924 | TR 38.717-01-01 v0.2.0 Rel-17 NR Intra-band | Ericsson | agreed |  |  |
| R4-2015925 | TR 37.717-31-11 v0.2.0 Rel-17 DC combinations LTE 3DL and one NR band | Ericsson | agreed |  |  |
| R4-2015926 | TR 38.717-04-01 v0.2.0 Rel-17 NR Inter-band 4 bands CA | Ericsson | agreed |  |  |
| R4-2015927 | CR to add NR-U EN-DC combinations | Ericsson, Charter Communication, T-Mobile US | revised |  | R4-2016801 |
| R4-2015928 | CR to add configurations for 1\_n40 and 3\_n40 | Ericsson | endorsed |  |  |
| R4-2015929 | TP for TR 37.717-21-11 to include DC\_1A-40A\_n78A, DC\_1A-40C\_n78A | Ericsson | noted |  |  |
| R4-2015930 | TP for TR 37.717-21-11 to include DC\_3A-40A\_n78A, DC\_3A-40C\_n78A | Ericsson | noted |  |  |
| R4-2015931 | TP for TR 37.717-21-11 to include DC\_7A-40A\_n78A, DC\_7A-40C\_n78A | Ericsson | noted |  |  |
| R4-2015932 | TP for TR 37.717-31-11 to include DC\_1A-3A-40A\_n78A, DC\_1A-3A-40C\_n78A | Ericsson | noted |  |  |
| R4-2015933 | TP for TR 37.717-31-11 to include DC\_1A-7A-40A\_n78A, DC\_1A-7A-40C\_n78A | Ericsson | noted |  |  |
| R4-2015934 | TP for TR 37.717-31-11 to include DC\_3A-7A-40A\_n78A, DC\_3A-7A-40C\_n78A | Ericsson | noted |  |  |
| R4-2015935 | TP for TR 37.717-41-11 to include DC\_1A-3A-7A-40A\_n78A, DC\_1A-3A-7A-40C\_n78A | Ericsson | noted |  |  |
| R4-2015936 | TP for TR 37.717-11-21 to include DC\_28A\_n1A-n78A | Ericsson | approved |  |  |
| R4-2015937 | TP for TR 37.717-11-21 to include DC\_3A-7A\_n40A-n78A | Ericsson | approved |  |  |
| R4-2015938 | TP for TR 37.717-11-21 to include DC\_1A-7A\_n40A-n78A | Ericsson | approved |  |  |
| R4-2015939 | TP for TR 37.717-11-21 to include DC\_7A-28A\_n40A-n78A | Ericsson | approved |  |  |
| R4-2015940 | TP for TR 37.717-11-21 to include DC\_3A-7A-28A\_n40A-n78A | Ericsson | approved |  |  |
| R4-2015941 | TP for TR 37.717-11-21 to include DC\_1A-3A-7A\_n40A-n78A | Ericsson | approved |  |  |
| R4-2015942 | TP for TR 37.717-11-21 to include DC\_1A-7A-28A\_n40A-n78A | Ericsson | approved |  |  |
| R4-2015943 | TP for TR 37.717-11-21 to include DC\_1A-3A-7A-28A\_n40A-n78A | Ericsson | approved |  |  |
| R4-2015944 | draft CR 38.101-3 to add DC\_2A-2A-5A-66A\_n66A | Ericsson, Bell | endorsed |  |  |
| R4-2015945 | NTN Proposed RF Core Requirements | THALES | noted |  |  |
| R4-2015946 | NTN RRM and Demodulation KPIs | THALES | noted |  |  |
| R4-2015947 | TP to TR 38.808: BS architecture and BS classes for 52-71 GHz range | Huawei | noted |  |  |
| R4-2015948 | TP to TR 38.808: PA trends and typical Noise Figure values | Huawei | noted |  |  |
| R4-2015949 | CR to TS 37.145-1: correction of manufacturer | Huawei | revised |  | R4-2017589 |
| R4-2015950 | CR to TS 37.145-1: correction of manufacturer | Huawei | agreed |  |  |
| R4-2015951 | CR to TS 37.145-1: correction of manufacturer | Huawei | agreed |  |  |
| R4-2015952 | CR to TS 37.145-1: correction of manufacturer | Huawei | agreed |  |  |
| R4-2015953 | CR to TS 37.145-2: correction of manufacturer | Huawei | revised |  | R4-2017649 |
| R4-2015954 | CR to TS 37.145-2: correction of manufacturer | Huawei | agreed |  |  |
| R4-2015955 | CR to TS 37.145-2: correction of manufacturer | Huawei | agreed |  |  |
| R4-2015956 | CR to TS 37.145-2: correction of manufacturer | Huawei | agreed |  |  |
| R4-2015957 | CR to TS 37.104: addition of missing note for BC1/BC3 OBUE applicability table for WA BS, Rel-16 | Huawei | agreed |  |  |
| R4-2015958 | CR to TS 38.113: correction of the scope and other technical improvements, Rel-15 | Huawei | revised |  | R4-2017441 |
| R4-2015959 | CR to TS 38.113: correction of the scope and other technical improvements, Rel-16 | Huawei | agreed |  |  |
| R4-2015960 | CR to TR 37.941: overall TR cleanup, Rel-15 | Huawei | revised |  | R4-2017575 |
| R4-2015961 | CR to TR 37.941: overall TR cleanup, Rel-16 | Huawei | agreed |  |  |
| R4-2015962 | CR to TR 37.941: MU and TT values alignments and corrections, Rel-15 | Huawei | revised |  | R4-2017579 |
| R4-2015963 | CR to TR 37.941: MU and TT values alignments and corrections, Rel-16 | Huawei | agreed |  |  |
| R4-2015964 | CR to TR 37.941: alignments and corrections to the MU contributors and MU derivations, Rel-15 | Huawei | revised |  | R4-2017578 |
| R4-2015965 | CR to TR 37.941: alignments and corrections to the MU contributors and MU derivations, Rel-16 | Huawei | agreed |  |  |
| R4-2015966 | CR to TR 38.820: correction in the NF analysis for NR BS, Rel-16 | Huawei | not pursued |  |  |
| R4-2015967 | CR to TS 37.105: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | not pursued |  |  |
| R4-2015968 | CR to TS 37.145-1: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | not pursued |  |  |
| R4-2015969 | CR to TS 37.145-2: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | not pursued |  |  |
| R4-2015970 | Correction to Pcmax: total radiated power | Ericsson | agreed |  |  |
| R4-2015971 | Correction to Pcmax: total radiated power | Ericsson | agreed |  |  |
| R4-2015972 | Correction to the intra-cell guard band definition for wideband operation | Ericsson | revised |  | R4-2016797 |
| R4-2015973 | Correction to CA bandwidth classes M, N and O | Ericsson | not pursued |  |  |
| R4-2015974 | Correction to receiver requirements for shared spectrum channel access | Ericsson | revised |  | R4-2016800 |
| R4-2015975 | Modification of Pcmax for UL CA with uplink Tx switching capability | Ericsson | not pursued |  |  |
| R4-2015976 | PHR and Pcmax verification for NR PC2 devices supporting NR PC3 for EN-DC | Ericsson | noted |  |  |
| R4-2015977 | Correction of Pcmax for an NR PC2 UE supporting NR PC3 for EN-DC | Ericsson | not pursued |  |  |
| R4-2015978 | Modification of FR2 MOP verification with account of the 38.213 scaling rule | Ericsson | noted |  |  |
| R4-2015979 | Correction to Pcmax: account of power prioritization rules for secondary cells | Ericsson | not pursued |  |  |
| R4-2015980 | Correction to modified MPR behaviour | Ericsson | not pursued |  |  |
| R4-2015981 | Verification of the P-MPR method for EN-DC FDD-TDD power class 2 | Ericsson | not pursued |  |  |
| R4-2015982 | On the FG | Ericsson | noted |  |  |
| R4-2015983 | Facilitating SAR compliance for UL inter-band CA PC2 | Ericsson | noted |  |  |
| R4-2015984 | On power amplifier aspects for UE in the 52.6-71 GHz range | Ericsson | noted |  |  |
| R4-2015985 | CR on measurement restrictions for FR2 inter-band CA | Intel Corporation | agreed |  |  |
| R4-2015986 | Discussion on NR-U General aspects | Intel Corporation | noted |  |  |
| R4-2015987 | Discussion on NR-U PDSCH requirements | Intel Corporation | noted |  |  |
| R4-2015988 | Discussion on NR-U PUSCH requirements | Intel Corporation | noted |  |  |
| R4-2015989 | Discussion on NR-U PUCCH requirements | Intel Corporation | noted |  |  |
| R4-2015990 | Discussion on NR-U PRACH requirements | Intel Corporation | noted |  |  |
| R4-2015991 | TP to TR 38.808: Timing considerations for operation between 52.6 and 71 GHz | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2015992 | CR to TS 38.101-3 clarifications on indication of Single Uplink allowed for intra-band EN-DC and NE-DC | CHTTL | not pursued |  | R4-2017821 |
| R4-2015993 | CR to TS 38.133: Corrections to inter-RAT FR1 test cases (Rel-15) | Rohde & Schwarz | revised |  | R4-2017059 |
| R4-2015994 | CR to TS 38.133: Corrections to inter-RAT FR1 test cases (Rel-16) | Rohde & Schwarz | agreed |  |  |
| R4-2015995 | CR to TS 38.133: Corrections to inter-RAT FR2 test cases (Rel-15) | Rohde & Schwarz | revised |  | R4-2017060 |
| R4-2015996 | CR to TS 38.133: Corrections to inter-RAT FR2 test cases (Rel-16) | Rohde & Schwarz | agreed |  |  |
| R4-2015997 | Future proof UE DC location signaling for intra-band UL CA | Skyworks Solutions Inc. | noted |  |  |
| R4-2015998 | Correction to spurious co-existence requirements for n28 and n83 | Keysight Technologies UK Ltd | not pursued |  |  |
| R4-2015999 | CR to TS 38.101-3 clarifications on indication of Single Uplink allowed for intra-band EN-DC and NE-DC | CHTTL | withdrawn |  |  |
| R4-2016000 | TP to TR 38.808: Timing considerations for operation between 52.6 and 71 GHz | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016001 | Draft reply LS on simultaneous Rx/Tx for inter-band NR-DC | ZTE Wistron Telecom AB | noted |  |  |
| R4-2016002 | CRS-IC requirements for LTE-NR coexistence scenario | Intel Corporation | not treated |  |  |
| R4-2016003 | CR on Applicability rules for Normal NR CA demodulation requirements | Intel Corporation | revised |  | R4-2017566 |
| R4-2016004 | CR on FRC for UE Ultra-low BLER requirements | Intel Corporation | agreed |  | - |
| R4-2016005 | CR on FRC for UE Higher BLER requirements | Intel Corporation | revised |  | R4-2017512 |
| R4-2016006 | CR on FR2 requirements for PUSCH mapping Type B with low number of symbols | Intel Corporation | revised |  | R4-2017523 |
| R4-2016007 | LTE Rel | Skyworks Solutions Inc. | noted |  |  |
| R4-2016008 | LTE CA\_NS\_08 A-MPR Correction | Skyworks Solutions Inc. | noted |  |  |
| R4-2016009 | CA\_n7B 50MHz Measurements for A-MPR and MSD Test Points | Skyworks Solutions Inc. | noted |  |  |
| R4-2016010 | n71 35MHz AMPR and MSD Measurements | Skyworks Solutions Inc. | noted |  |  |
| R4-2016011 | n8 35MHz AMPR and MSD Measurements | Skyworks Solutions Inc. | noted |  |  |
| R4-2016012 | CR 36.133 Corrections to test cases for SCell Hibernation | Ericsson | agreed |  |  |
| R4-2016013 | CR 36.133 Correction to test cases for SCell Hibernation (Rel-16) | Ericsson | agreed |  |  |
| R4-2016014 | On TC3 MAC-CE based spatial relation info switching | Ericsson | noted |  |  |
| R4-2016015 | CR 38.133 TC3 MAC-CE based spatial relation info switching | Ericsson | revised |  | R4-2017179 |
| R4-2016016 | CR 38.133 Corrections to Conditional PSCell Change delay requirement | Ericsson | agreed |  |  |
| R4-2016017 | General discussion on MR-DC RRM test cases | Ericsson | noted |  |  |
| R4-2016018 | MR-DC RRM test case list and time plan | Ericsson | noted |  |  |
| R4-2016019 | CR 38.133 Removal of brackets for Multiple SCell activation | Ericsson | agreed |  |  |
| R4-2016020 | CR 38.133 Removal of brackets for SCell Dormancy and Direct SCell Activation | Ericsson | revised |  | R4-2017304 |
| R4-2016021 | CR 36.133 Removal of brackets for NR SCell Dormancy | Ericsson | revised |  | R4-2017127 |
| R4-2016022 | CR 36.133 Removal of brackets for SFTD measurements | Ericsson | agreed |  |  |
| R4-2016023 | CR 36.133 Removal of brackets for SFTD measurements (Rel-16) | Ericsson | agreed |  |  |
| R4-2016024 | CR 38.133 Corrections to test cases for TCI state switching | Ericsson | agreed |  |  |
| R4-2016025 | CR 38.133 Correction to test case for TCI state switching (Rel-16) | Ericsson | agreed |  |  |
| R4-2016026 | CR 38.133 Corrections to MAC-CE and RRC-based spatial relation switching requirements | Ericsson | postponed |  |  |
| R4-2016027 | n7 35MHz AMPR and MSD Measurements | Skyworks Solutions Inc. | noted |  |  |
| R4-2016028 | DraftCR for TR38.809: IAB RRM general | Samsung | endorsed |  |  |
| R4-2016029 | DraftCR to TS38.133 on L1-SINR Measurement Requirement | Samsung | endorsed |  |  |
| R4-2016030 | On the Optionality of RAN4 Requirements | Qualcomm Incorporated, CMCC, KDDI, AT&T, Ericsson, Nokia, T-Mobile USA, China Telecom, Vodafone, Verizon, Softbank | noted |  |  |
| R4-2016031 | Correction to EIS definition | Rohde & Schwarz | revised |  | R4-2016788 |
| R4-2016032 | Correction to EIS definition | Rohde & Schwarz | agreed |  |  |
| R4-2016033 | Discussion on Type II PMI reporting test definition | Rohde & Schwarz | noted |  |  |
| R4-2016034 | Discussion on remaining open issues for Tx diversity requirements | Rohde & Schwarz | noted |  |  |
| R4-2016035 | CR Correction to B72 coex - CA\_NS\_08 - Band 10 protection 36.101 Rel15 | Skyworks Solutions Inc. | revised |  | R4-2016996 |
| R4-2016036 | TP for NR Rel-17 TR 38.808: Time and synchronization impact | Ericsson | noted |  |  |
| R4-2016037 | NTN impact on RRM | Ericsson | noted |  |  |
| R4-2016038 | IAB Demodulation Testing | Qualcomm Incorporated | noted |  |  |
| R4-2016039 | IAB Demodulation Testing | Qualcomm Incorporated | noted |  |  |
| R4-2016040 | CR Correction to B72 coex - CA\_NS\_08 - Band 10 protection 36.101 Rel16 | Skyworks Solutions Inc. | revised |  | R4-2016997 |
| R4-2016041 | CR Removal of Band 10 protection 38101-1 Rel15 | Skyworks Solutions Inc. | agreed |  |  |
| R4-2016042 | CR Correction to NS\_27 and Band 10 protection 38101-1 Rel16 | Skyworks Solutions Inc. | agreed |  |  |
| R4-2016043 | CSI-RS based intra-frequency measurement requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016044 | 38.133 CR on CSI-RS based intra-frequency measurement requirements | Nokia, Nokia Shanghai Bell | merged |  |  |
| R4-2016045 | 38.133 CR on scheduling restrictions for CSI-RS based intra-frequency measurement | Nokia, Nokia Shanghai Bell | merged |  |  |
| R4-2016046 | Discussion on the performance of CSI-RS based intra-frequency measurements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016047 | 38.133 CR on the intra-frequency CSI-RSRP accuracy requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2017319 |
| R4-2016048 | 38.133 CR on the conditions for NR intra-frequency CSI-RS based measurements | Nokia, Nokia Shanghai Bell | merged |  |  |
| R4-2016049 | Simulation results for CSI-RS based measurements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016050 | 38.133 CR on the test case of EN-DC event triggered reporting for intra-frequency CSI-RS based measurements in FR1 | Nokia, Nokia Shanghai Bell | revised |  | R4-2017238 |
| R4-2016051 | 38.133 CR on the test cases of EN-DC measurement accuracy in FR1 for CSI-RS based intra-frequency and inter-frequency measurements | Nokia, Nokia Shanghai Bell | revised |  | R4-2017239 |
| R4-2016052 | 38133 CR for Test case of E-UTRAN NR FR1 interruptions at NR SRS carrier switching | Nokia, Nokia Shanghai Bell | revised |  | R4-2017187 |
| R4-2016053 | Frequency separation class alignment | Ericsson | not pursued |  |  |
| R4-2016054 | Correction of p-Max I.E and corresponding references | Ericsson | not pursued |  | R4-2016793 |
| R4-2016055 | Correction of p-Max I.E and corresponding references | Ericsson | not pursued |  | R4-2016792 |
| R4-2016056 | Correction of transmission gap definition for Relative power tolerance | Ericsson | withdrawn |  |  |
| R4-2016057 | Correction of transmission gap definition for Relative power tolerance | Ericsson | not pursued |  |  |
| R4-2016058 | On UE Core requirements for FR2 HST | Ericsson | noted |  |  |
| R4-2016059 | Draft CR to add 35MHz and 45 MHz Bandwidth to TS38.101-1 | Ericsson | not pursued |  |  |
| R4-2016060 | Introduction of 35MHz and 45MHz regarding CA, DC, V2x combinations | Ericsson | noted |  |  |
| R4-2016061 | Analysis on power calibration gaps | Ericsson, Sony | noted |  |  |
| R4-2016062 | gNB timing positioning measurement report mapping update for k | Ericsson | revised |  | R4-2017161 |
| R4-2016063 | DL Transmission Model Definition for NR-U Demod Performances | Qualcomm Incorporated | noted |  |  |
| R4-2016064 | Simulation Assumptions for NR-U PDSCH Demodulation Performance Tests | Qualcomm Incorporated | noted |  |  |
| R4-2016065 | Draft CR on Cell reselection Tests for UE configured with relaxed measurement criterion | Qualcomm Incorporated | revised |  | R4-2017141 |
| R4-2016066 | CR for correcting wrong requirement for UE fulfilling not-at-cell edge criterion for measurement relaxation | Qualcomm Incorporated | not pursued |  |  |
| R4-2016067 | Discussion on CLTA maximum height | Huawei | noted |  |  |
| R4-2016068 | CR to TS 37.145-2 - Update CLTA definition, Rel-15 | Huawei | not pursued |  |  |
| R4-2016069 | CR to TS 37.145-2 - Update CLTA definition, Rel-16 | Huawei | withdrawn |  |  |
| R4-2016070 | CR to TS 38.141-2 - Update CLTA definition, Rel-15 | Huawei | not pursued |  |  |
| R4-2016071 | CR to TS 38.141-2 - Update CLTA definition, Rel-16 | Huawei | withdrawn |  |  |
| R4-2016072 | Discussion on co-location for adjacent bands | Huawei | noted |  |  |
| R4-2016073 | CR to TS 37.145-1: Corrections to conformance requirements, Rel-15 | Huawei | revised |  | R4-2017590 |
| R4-2016074 | CR to TS 37.145-1: Corrections to conformance requirements, Rel-16 | Huawei | agreed |  |  |
| R4-2016075 | CR to TS 37.145-2: Corrections to conformance requirements including UEM additional requirements, Rel-15 | Huawei | revised |  | R4-2017662 |
| R4-2016076 | CR to TS 37.145-2: Corrections to conformance requirements including UEM additional requirements, Rel-16 | Huawei | agreed |  |  |
| R4-2016077 | CR to TS 37.105: Corrections to core requirements including UEM additional requirements, Rel-15 | Huawei | revised |  | R4-2017591 |
| R4-2016078 | CR to TS 37.105: Corrections to core requirements including UEM additional requirements, Rel-16 | Huawei | agreed |  |  |
| R4-2016079 | Discussion on AAS UEM additional requirements | Huawei | noted |  |  |
| R4-2016080 | CR to TS 37.145-2: Corrections to single RAT E-UTRA additional requirements for band 89, Rel-16 | Huawei | agreed |  |  |
| R4-2016081 | draftCR to TS 38.147: IAB-MT number of TRX | Huawei | not pursued |  |  |
| R4-2016082 | draft CR to TS 38.174 - Correction of IAB-modulation quality sub-clause. | Huawei | not pursued |  |  |
| R4-2016083 | draftCR to TS 38.174: Definitions, symbols and abreviations | Huawei | not pursued |  |  |
| R4-2016084 | Discussion on conformance specification | Huawei | noted |  |  |
| R4-2016085 | CR to 38.101-3 DC\_1A-20A\_n28A Missing MSD | VODAFONE Group Plc | withdrawn |  |  |
| R4-2016086 | UL inter-band CA for different band group based on IBE | NTT DOCOMO INC. | noted |  |  |
| R4-2016087 | CR to 38.101-3 DC\_1A-20A\_n28A Missing MSD | VODAFONE Group Plc | withdrawn |  |  |
| R4-2016088 | gNB Positioning Requirements | Ericsson | noted |  |  |
| R4-2016089 | Discussion on NR-U PDSCH demodulation requirements | Ericsson | noted |  |  |
| R4-2016090 | Discussion on NR-U PDCCH demodulation requirements | Ericsson | noted |  |  |
| R4-2016091 | Discussion on NR-U CSI performance requirements | Ericsson | noted |  |  |
| R4-2016092 | Discussion on FR2 DL 256QAM | Ericsson | noted |  |  |
| R4-2016093 | Discussion on FR2 DL 256QAM | Ericsson | noted |  |  |
| R4-2016094 | Simulation results for FR2 256QAM UE CQI performance requirements | Ericsson | noted |  |  |
| R4-2016095 | Simulation results for FR2 256QAM UE demodulation | Ericsson | noted |  |  |
| R4-2016096 | Simulation results on UE demodulation performance impact by the introduction of NR 47GHz band | Ericsson | noted |  |  |
| R4-2016097 | On demodulation requirements for the new 47GHz band | Ericsson | noted |  |  |
| R4-2016098 | Summary of simulation results of NR UE CSI PMI with 16, and 32Tx antennas | Ericsson | noted |  |  |
| R4-2016099 | Simulation results for Rel-15 Type II codebook | Ericsson | noted |  |  |
| R4-2016100 | Evaluations of Rel-15 Type II PMI testing | Ericsson | noted |  |  |
| R4-2016101 | Simulation results for Rel-16 Type II codebook | Ericsson | noted |  |  |
| R4-2016102 | Evaluations of Rel-16 Type II PMI testing | Ericsson | noted |  |  |
| R4-2016103 | Discussion on UE URLLC demodulation performance requirements with higher BLER | Ericsson | noted |  |  |
| R4-2016104 | Simulation results on UE URLLC demodulation performance requirements with higher BLER | Ericsson | noted |  |  |
| R4-2016105 | Simulation results on UE URLLC demodulation performance requirements for Ultra low BLER | Ericsson | noted |  |  |
| R4-2016106 | CR to TS 38.101-4: Performance requirements for URLLC High BLER feature tests | Ericsson | revised |  | R4-2017513 |
| R4-2016107 | CR to TS 38.101-4: Performance requirements for URLLC PDSCH 0.001% BLER | Ericsson | revised |  | R4-2017497 |
| R4-2016108 | CR to TS38.101-4: Addition of Rel-16 HST FRCs | Ericsson | revised |  | R4-2017546 |
| R4-2016109 | gNB Positioning UL SRS System Simulation Results | Ericsson | noted |  |  |
| R4-2016110 | Further discussion on numerology and BW for 52.6GHz-71GHz | ZTE Corporation | noted |  |  |
| R4-2016111 | Discussion on irregular channel bandwidth for NR system | ZTE Corporation | noted |  |  |
| R4-2016112 | Discussion on simulation assumptions for NTN coexistence study | ZTE Corporation | noted |  |  |
| R4-2016113 | Discussion on release independent and signalling for brand new channel bandwidth | ZTE Corporation | noted |  |  |
| R4-2016114 | Discussion on BS RF requirement for new channel bandwidth of 35MHz and 45MHz | ZTE Corporation | noted |  |  |
| R4-2016115 | Draft CR to TS 38.104: Introduction of 35MHz and 45MHz | ZTE Corporation | noted |  |  |
| R4-2016116 | Draft CR to TS 38.141-1: Introduction of 35MHz and 45MHz | ZTE Corporation | noted |  |  |
| R4-2016117 | Draft CR to TS 38.141-2: Introduction of 35MHz and 45MHz | ZTE Corporation | not pursued |  | R4-2016868 |
| R4-2016118 | Draft CR to TS 37.104: Introduction of 35MHz and 45MHz | ZTE Corporation | not pursued |  |  |
| R4-2016119 | Draft CR to 37.141: Introduction of 35MHz and 45MHz | ZTE Corporation | not pursued |  |  |
| R4-2016120 | Draft CR to TS 37.105: Introduction of 35MHz and 45MHz | ZTE Corporation | not pursued |  |  |
| R4-2016121 | Draft CR to 37.145-1: Introduction of 35MHz and 45MHz | ZTE Corporation | not pursued |  |  |
| R4-2016122 | Draft CR to 37.145-2: Introduction of 35MHz and 45MHz | ZTE Corporation | not pursued |  |  |
| R4-2016123 | Discussion on NR-U channel arrangement for 6GHz | ZTE Corporation | noted |  |  |
| R4-2016124 | Discussions on remaining issue of NR-U BS RF requirements | ZTE Corporation | noted |  |  |
| R4-2016125 | CR to 38.104: Corrections on NR-U BS RF requirements | ZTE Corporation | not pursued |  |  |
| R4-2016126 | CR to TS 38.141-1: introduction of NR-U into TS 38.141-1 | ZTE Corporation | not pursued |  |  |
| R4-2016127 | CR to 37.145-2: Correction on NR REFSENS | ZTE Corporation | agreed |  |  |
| R4-2016128 | CR to 37.145-2: Correction on NR REFSENS | ZTE Corporation | agreed |  |  |
| R4-2016129 | CR to TS 36.101 clarifications on supported SCS for UE supporting LTE MBMS | ZTE Corporation | not pursued |  |  |
| R4-2016130 | CR to TS 36.101 clarifications on supported SCS for UE supporting LTE MBMS | ZTE Corporation | withdrawn |  |  |
| R4-2016131 | CR to TS 36.101 clarifications on supported SCS for UE supporting LTE MBMS | ZTE Corporation | withdrawn |  |  |
| R4-2016132 | Maintenance TP to TR38.921 | ZTE Corporation | revised |  | R4-2016903 |
| R4-2016133 | TP to TR38.921 : BS spurious emission | ZTE Corporation | revised |  | R4-2016906 |
| R4-2016134 | DL simulation results for 6425-7125MHz and 10-10.5GHz | ZTE Corporation | noted |  |  |
| R4-2016135 | UL simulation results for 6425-7125MHz and 10-10.5GHz | ZTE Corporation | noted |  |  |
| R4-2016136 | TP to TR38.921: uplink ACIR model | ZTE Corporation | revised |  | R4-2017817 |
| R4-2016137 | Further discussion on IAB-MT power control and EVM measurement | ZTE Corporation | noted |  |  |
| R4-2016138 | Discussion on IAB conformance testing | ZTE Corporation | noted |  |  |
| R4-2016139 | Draft CR to TS 38.174: IAB General and RF core maintenance | ZTE Corporation | not pursued |  |  |
| R4-2016140 | LTE/NR spectrum sharing in band 48/n48 frequency range | Ericsson GmbH, Eurolab | noted |  |  |
| R4-2016141 | Discussions on measurement requirement for eMTC UE in RRC\_INACTIVE | Ericsson | noted |  |  |
| R4-2016142 | Measurement requirement for eMTC UE in RRC\_INACTIVE | Ericsson | merged |  |  |
| R4-2016143 | Corrections to RSS based measurement requirements | Ericsson | merged |  |  |
| R4-2016144 | Discussions on testing serving cell measurement relaxation requirements | Ericsson | noted |  |  |
| R4-2016145 | Test case on serving cell relaxation for eMTC | Ericsson | endorsed |  |  |
| R4-2016146 | Corrections to UE power saving requirements | Ericsson | revised |  | R4-2017132 |
| R4-2016147 | Discussions on UE power saving performance requirements | Ericsson | noted |  |  |
| R4-2016148 | Cell reselection to FR2 inter-frequency NR case under power saving | Ericsson | revised |  | R4-2017142 |
| R4-2016149 | Discussions on testing cell reselection to FR2 inter-frequency NR case | Ericsson | noted |  |  |
| R4-2016150 | iscussions on UE power saving for RLM and BM | Ericsson | noted |  |  |
| R4-2016151 | Draft Reply LS to RAN2 on cell-grouping UE capability for synchronous NR-DC | Ericsson GmbH, Eurolab | noted |  |  |
| R4-2016152 | CR to 38.141-2: Annex C correction on frequency range of FR2 TT table (C.2) | Keysight Technologies UK Ltd | revised |  | R4-2017592 |
| R4-2016153 | CR to 38.141-2: Annex C correction on frequency range of FR2 TT table (C.2) | Keysight Technologies UK Ltd | withdrawn |  |  |
| R4-2016154 | gNB Positioning UL SRS Link Level Simulation Results | Ericsson | noted |  |  |
| R4-2016155 | 47GHz band TT for NR BS RF requirement | Keysight Technologies UK Ltd | noted |  |  |
| R4-2016156 | Refinements on CSSF within gap to include NR positioning measurements | Nokia, Nokia Shanghai Bell | revised |  | R4-2017150 |
| R4-2016157 | On gNB measurement accuracy requirements for NR positioning | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016158 | System simulation results for SRS for NR positioning | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016159 | System simulation results for SRS for NR positioning | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016160 | Removal of annex B.2.6 on one shot timing adjustment in 38.133 | Ericsson | revised |  | R4-2017061 |
| R4-2016161 | Removal of annex B.2.6 on one shot timing adjustment in 38.133 | Ericsson | agreed |  |  |
| R4-2016162 | HARQ delay during RRC based BWP, CBW and TCI switching procedures | Ericsson | noted |  |  |
| R4-2016163 | Correction to NR FR1 DL active BWP switch of Cell with non-DRX in SA (A.6.5.6.2.1) | Ericsson | revised |  | R4-2017309 |
| R4-2016164 | Correction to NR FR1 DL active BWP switch of Cell with non-DRX in SA (A.6.5.6.2.1) | Ericsson | agreed |  |  |
| R4-2016165 | Analysis of RRC based non-simultaneous multiple CC BWP | Ericsson | noted |  |  |
| R4-2016166 | Correction to RRC based non-simultaneous multiple CC BWP | Ericsson | revised |  | R4-2017176 |
| R4-2016167 | Test cases for BWP switching on multiple CCs | Ericsson | noted |  |  |
| R4-2016168 | Analysis of TC3: UE specific CBW change on FR1 NR PCell in NR SA | Ericsson | noted |  |  |
| R4-2016169 | TC3: UE specific CBW change on FR1 NR PCell in NR SA (A.6.5.7) | Ericsson | revised |  | R4-2017220 |
| R4-2016170 | Symbols, abbreviations and definitions for IAB RRM in 38.174 | Ericsson | revised |  | R4-2017113 |
| R4-2016171 | Issues with IAB RRM requirements | Ericsson | noted |  |  |
| R4-2016172 | Specification structure for IAB-MT RRM test cases in 38.174 | Ericsson | revised |  | R4-2017117 |
| R4-2016173 | Principles for IAB RRM test cases | Ericsson | noted |  |  |
| R4-2016174 | IAB RRM test case list | Ericsson | noted |  |  |
| R4-2016175 | Analysis of requirements for known cell in RRC re-establishment with CCA | Ericsson | noted |  |  |
| R4-2016176 | Requirements for known cell in RRC re-establishment with CCA | Ericsson | agreed |  |  |
| R4-2016177 | Correction to timing requirements in NR-U | Ericsson | revised |  | R4-2017088 |
| R4-2016178 | Big CR on FR2 new FWA UE RRM requirements in 36.133 | Ericsson | revised |  | R4-2017262 |
| R4-2016179 | Analysis of RRM requirements for 47 GHz band | Ericsson | noted |  |  |
| R4-2016180 | Email summary of UE and BS EMC discussion | Ericsson | not treated |  |  |
| R4-2016181 | Revised WID: LTE Advanced inter-band CA Rel-17 for x bands DL (x=4, 5) with 1 band UL | Nokia, Nokia Shanghai Bell | endorsed |  |  |
| R4-2016182 | Updated scope of TR: LTE inter-band CA for 4/5 bands DL with 1 band UL | Nokia, Nokia Shanghai Bell | approved |  |  |
| R4-2016183 | TR 36.717-04-01 v0.2.0 | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016184 | CR to 37.104: Correction to ACLR limit in non-contiguous spectrum (Rel-15) | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016185 | CR to 37.104: Correction to ACLR limit in non-contiguous spectrum (Rel-16) | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016186 | CR to 37.141: Correction to ACLR limit in non-contiguous spectrum (Rel-15) | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016187 | CR to 37.141: Correction to ACLR limit in non-contiguous spectrum (Rel-16) | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016188 | CR to 36.104: Introduction of n96 medium range requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2017463 |
| R4-2016189 | CR to 37.104: Introduction of n96 medium range requirements | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016190 | CR to 37.105: Introduction of n96 medium range requirements | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016191 | TP to TR 38.847: BS RF requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2016884 |
| R4-2016192 | Draft CR to 36.104: Introduction of n24 requirements | Nokia, Nokia Shanghai Bell | endorsed |  |  |
| R4-2016193 | Draft CR to 36.141: Introduction of n24 requirements | Nokia, Nokia Shanghai Bell | endorsed |  |  |
| R4-2016194 | Draft CR to 37.104: Introduction of n24 requirements | Nokia, Nokia Shanghai Bell | endorsed |  |  |
| R4-2016195 | Draft CR to 37.141: Introduction of n24 requirements | Nokia, Nokia Shanghai Bell | endorsed |  |  |
| R4-2016196 | Draft CR to 38.104: Introduction of n24 | Nokia, Nokia Shanghai Bell | revised |  | R4-2016895 |
| R4-2016197 | Draft CR to 36.104: Correction to Band 24 requirements (Rel-10) | Nokia, Nokia Shanghai Bell | revised |  | R4-2016888 |
| R4-2016198 | Draft CR to 36.104: Correction to Band 24 requirements (Rel-10) | Nokia, Nokia Shanghai Bell | revised |  | R4-2016889 |
| R4-2016199 | Draft CR to 37.104: Correction to Band 24 requirements (Rel-10) | Nokia, Nokia Shanghai Bell | revised |  | R4-2016890 |
| R4-2016200 | Draft CR to 36.104: Correction to Band 24 requirements (Rel-10) | Nokia, Nokia Shanghai Bell | revised |  | R4-2016891 |
| R4-2016201 | On the use of overlapping channel bandwidths from UE perspective | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016202 | CR to 37.145-1: Correction to applicability of additional BC3 requirement (Rel-15) | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016203 | CR to 37.145-1: Correction to applicability of additional BC3 requirement (Rel-16) | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016204 | CR to 37.145-2: Correction to applicability of additional BC3 requirement (Rel-15) | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016205 | CR to 37.145-2: Correction to applicability of additional BC3 requirement (Rel-16) | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016206 | CR to 38.141-2: Correction to test system uncertainty | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016207 | CR to TS 38.133: Corrections to Tables 9.5.4.1-1 and 9.5.4.2-1. | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016208 | On FR2 MIMO OTA channel model down selection | Keysight Technologies UK Ltd | noted |  |  |
| R4-2016209 | On FR1 4x4 vs. 2x2 channel models | Keysight Technologies UK Ltd | noted |  |  |
| R4-2016210 | On Probe Configurations and Channel model vs. OTA test system coordinate systems for FR2 MIMO OTA | Keysight Technologies UK Ltd | noted |  |  |
| R4-2016211 | Update of FR2 probe configuration | Keysight Technologies UK Ltd | agreed |  |  |
| R4-2016212 | On minimizing the impact of polarization basis mismatch between the TE and DUT | Keysight Technologies UK Ltd | noted |  |  |
| R4-2016213 | On Test methodology for high DL power and low UL power test cases | Keysight Technologies UK Ltd | noted |  |  |
| R4-2016214 | On extreme temperature condition testing | Keysight Technologies UK Ltd | noted |  |  |
| R4-2016215 | CR to TS 38.133: Test cases for L1-RSRP measurement for beam reporting for NR HST | Nokia, Nokia Shanghai Bell | revised |  | R4-2017251 |
| R4-2016216 | TS 38.151 v0.1.0 NR MIMO OTA requirements | vivo | agreed |  |  |
| R4-2016217 | LS on FR1 MIMO OTA | vivo, CAICT | revised |  | R4-2017583 |
| R4-2016218 | TP to TS 38.151 v0.0.1 on general part | vivo, CAICT | approved |  |  |
| R4-2016219 | Discussions on FR2 MIMO OTA requirements | vivo, CAICT | noted |  |  |
| R4-2016220 | Channel model simulation for FR1 performance requirement | vivo | withdrawn |  |  |
| R4-2016221 | TP to TS 38.151 v0.0.1 on FR1 Channel model and RMC | vivo, CAICT, Spirent | revised |  | R4-2017584 |
| R4-2016222 | TP to TS 38.151 v0.0.1 on FR1 test system for requirements | vivo, CAICT | approved |  |  |
| R4-2016223 | Views on FR2 extreme condition testing | vivo | noted |  |  |
| R4-2016224 | Discussion on Testability issue of 47GHz band | vivo | noted |  |  |
| R4-2016225 | Correction of applicability of 2Rx requirements | vivo | revised |  | R4-2016990 |
| R4-2016226 | CR to TS38.101-3[R16] Applicability of 2Rx requirements | vivo | revised |  | R4-2017826 |
| R4-2016227 | Number of Slots for NR MIMO OTA testing | vivo, CAICT | noted |  |  |
| R4-2016228 | Number of Slots for NR MIMO OTA testing | vivo, CAICT | revised |  | R4-2017582 |
| R4-2016229 | EIRP and EIS evaluation for band n262 | vivo | noted |  |  |
| R4-2016230 | Motivation for WI: NR FR1 UE SA and EN-DC TRP and TRS | vivo | not treated |  |  |
| R4-2016231 | New WID: NR FR1 UE SA and EN-DC TRP and TRS | vivo, OPPO, CMCC, CAICT, Rohde & Schwarz | not treated |  |  |
| R4-2016232 | Revised WID: Rel17 LTE inter-band CA for 2 bands DL with 1 band UL | Qualcomm Incorporated | endorsed |  |  |
| R4-2016233 | Introduction of Rel-17 LTE inter-band CA for 2 bands DL with 1 band UL combinations in TS36.101 | Qualcomm Incorporated | withdrawn |  |  |
| R4-2016234 | TR 36.717-02-01 Rel-17 LTE inter-band CA for 2 bands DL and 1 band UL CA | Qualcomm Incorporated | withdrawn |  |  |
| R4-2016235 | Views on for FR2 MIMO OTA | Qualcomm Incorporated | noted |  |  |
| R4-2016236 | Downlink co-existence simulation results for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz | Qualcomm Incorporated | noted |  |  |
| R4-2016237 | Uplink co-existence simulation results for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz | Qualcomm Incorporated | revised |  | R4-2016601 |
| R4-2016238 | CR 38101-3 R15 Band 10 protection and DC\_42\_n79 correction | Skyworks Solutions Inc. | revised |  | R4-2016790 |
| R4-2016239 | Simulation results of L1-SINR measurement accuracy | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016240 | CR to TS 38.133: Adding L1-SINR accuracy requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2017166 |
| R4-2016241 | CR 38101-3 R16 Band 10 protection and DC\_42\_n79 correction | Skyworks Solutions Inc. | agreed |  |  |
| R4-2016242 | IAB Common test issue on enviroment conditions | Ericsson | noted |  |  |
| R4-2016243 | IAB Common test issue on test configuration | Ericsson | noted |  |  |
| R4-2016244 | IAB Common test issue on test model | Ericsson | noted |  |  |
| R4-2016245 | On IAB conformance testing | Ericsson | noted |  |  |
| R4-2016246 | Conducted transmitter characteristic test | Ericsson | noted |  |  |
| R4-2016247 | Conducted receiver characteristic test | Ericsson | noted |  |  |
| R4-2016248 | Radiated transmitter characteristic test | Ericsson | noted |  |  |
| R4-2016249 | Radiated receiver characteristic test | Ericsson | noted |  |  |
| R4-2016250 | CR on general requirements in TS 38.174 | Ericsson | not pursued |  |  |
| R4-2016251 | CR on System parameters maintenance | Ericsson | not pursued |  |  |
| R4-2016252 | CR on Inband selectivity and blocking requirements | Ericsson | revised |  | R4-2017481 |
| R4-2016253 | CR on Rx Charateristic other related requirements | Ericsson | revised |  | R4-2017485 |
| R4-2016254 | CR on Sensitivity and dynamic range related requirements | Ericsson | not pursued |  |  |
| R4-2016255 | CR on Tx signal quality requirements | Ericsson | not pursued |  |  |
| R4-2016256 | CR on Tx characteristic other requirements | Ericsson | revised |  | R4-2017486 |
| R4-2016257 | CR on Tx Power related requirements | Ericsson | revised |  | R4-2017482 |
| R4-2016258 | CR on unwanted emission requirements | Ericsson | not pursued |  |  |
| R4-2016259 | CR on general requirements in TR 38.809 | Ericsson | endorsed |  |  |
| R4-2016260 | CR on System parameters | Ericsson | endorsed |  |  |
| R4-2016261 | CR on Inband selectivity and blocking requirements chapter | Ericsson | endorsed |  |  |
| R4-2016262 | CR on Sensitivity and dynamic range related requirements chapter | Ericsson | endorsed |  |  |
| R4-2016263 | CR on Tx signal quality related requirements chapter | Ericsson | revised |  | R4-2017478 |
| R4-2016264 | CR on Tx Power related requirements chapter | Ericsson | endorsed |  |  |
| R4-2016265 | CR on unwanted emission requirements chapter | Ericsson | endorsed |  |  |
| R4-2016266 | CR of adding LTE B24 for UE category NB1 in R17 | Ericsson, Ligado Networks | endorsed |  |  |
| R4-2016267 | CR of adding LTE B24 for UE category NB1 in R17 | Ericsson, Ligado Networks | endorsed |  |  |
| R4-2016268 | CR of adding LTE B24 for UE category NB1 in R17 | Ericsson, Ligado Networks | endorsed |  |  |
| R4-2016269 | CR of adding LTE B24 for UE category NB1 in R17 | Ericsson, Ligado Networks | endorsed |  |  |
| R4-2016270 | CR of adding LTE B24 for UE category NB1/NB2 in R17 | Ericsson, Ligado Networks | endorsed |  |  |
| R4-2016271 | CR of adding LTE B24 for UE category NB1/NB2 in R17 | Ericsson, Ligado Networks | endorsed |  |  |
| R4-2016272 | CR of adding LTE B24 for UE category NB1/NB2 in R17 | Ericsson, Ligado Networks | endorsed |  |  |
| R4-2016273 | CR of adding LTE B24 for UE category NB1/NB2 in R17 | Ericsson, Ligado Networks | endorsed |  |  |
| R4-2016274 | CR of adding LTE B24 for UE category NB1/NB2 in R17 | Ericsson, Ligado Networks | endorsed |  |  |
| R4-2016275 | CR of adding LTE B24 for UE category NB1/NB2 in R17 | Ericsson, Ligado Networks | endorsed |  |  |
| R4-2016276 | CR of adding LTE B24 for UE category NB2 in R17 | Ericsson, Ligado Networks | endorsed |  |  |
| R4-2016277 | CR of adding LTE B24 for UE category NB2 in R17 | Ericsson, Ligado Networks | endorsed |  |  |
| R4-2016278 | CR of adding LTE B24 for UE category NB2 in R17 | Ericsson, Ligado Networks | endorsed |  |  |
| R4-2016279 | Further consideration of A-MPR simulation assumption for B24 | Ericsson | noted |  |  |
| R4-2016280 | spectrum aspect on public saftey UC support | Ericsson | noted |  |  |
| R4-2016281 | General aspects on RAN4 work for public safety UC support | Ericsson | noted |  |  |
| R4-2016282 | CR to TS 37.145-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | not pursued |  | - |
| R4-2016283 | CR to TS 37.145-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2016284 | On selecting CLTA maximum height | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016285 | On the EVM Definition for Transmit Diversity | Motorola Mobility France S.A.S | withdrawn |  |  |
| R4-2016286 | CR to TS 38.141-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | not pursued |  |  |
| R4-2016287 | CR to TS 38.141-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2016288 | On the EVM Definition for Transmit Diversity | Lenovo, Motorola Mobility | noted |  |  |
| R4-2016289 | Discussions on TRP procedures | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016290 | CR to TR 37.941: Corrections to TRP measurement procedures | Nokia, Nokia Shanghai Bell | revised |  | R4-2017576 |
| R4-2016291 | CR to TR 37.941: Corrections to TRP measurement procedures | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2016292 | Justification for additional test cases for PWS | ROHDE & SCHWARZ | noted |  |  |
| R4-2016293 | CR to TR 37.941: Additional test cases for PWS | ROHDE & SCHWARZ | agreed |  |  |
| R4-2016294 | REFSENS for n96 | Apple Inc. | noted |  |  |
| R4-2016295 | Introduction of 35 MHz for n8, n66, n71 and 45 MHz for n66 | Apple Inc. | noted |  |  |
| R4-2016296 | Peak EIRP and Peak EIS for band n262 | Apple Inc. | noted |  |  |
| R4-2016297 | CA/DC Band configurations notations and usage in 3GPP | Apple | noted |  |  |
| R4-2016298 | Phase noise and PTRS | Qualcomm Incorporated | noted |  |  |
| R4-2016299 | Subcarrier spacing and minimum channel bandwidth | Qualcomm Incorporated | noted |  |  |
| R4-2016300 | Mirror CR to TR 37.941: Additional test cases for PWS | ROHDE & SCHWARZ | agreed |  |  |
| R4-2016301 | TP for TR 37.717-11-21 to include DC\_7A\_n78A-n258A to M, DC\_7C\_n78A-n258A to M | Ericsson, Telstra | approved |  |  |
| R4-2016302 | TP for TR 37.717-11-21 to include DC\_3A\_n78A-n258A to M | Ericsson, Telstra | approved |  |  |
| R4-2016303 | TP for TR 37.717-11-21 to include DC\_28A\_n78A-n258A to M | Ericsson, Telstra | approved |  |  |
| R4-2016304 | CR to add DC\_1\_n258 configurations | Ericsson, Telstra | endorsed |  |  |
| R4-2016305 | TP to add CA\_n3A-n5A-n7A, CA\_n3A-n5A-n7B | Ericsson, Telstra | approved |  |  |
| R4-2016306 | TP to add CA\_n5A-n7A-n78A, CA\_n5A-n7B-n78A | Ericsson, Telstra | approved |  |  |
| R4-2016307 | TP to add CA\_n3A-n5A-n7A-n78A, CA\_n3A-n5A-n7B-n78A | Ericsson, Telstra | approved |  |  |
| R4-2016308 | CR to add CBW 25, 30 and 70 MHz for n78 in n78-n258 configurations | Ericsson, Telstra | endorsed |  |  |
| R4-2016309 | CR to add CA\_n7B UL configurations | Ericsson, Telstra | not pursued |  |  |
| R4-2016310 | CR to add CA\_n7B UL configurations | Ericsson, Telstra | not pursued |  |  |
| R4-2016311 | CR to add CA\_n7B UL configurations | Ericsson, Telstra | not pursued |  |  |
| R4-2016312 | CR to add CA\_n7B UL configurations | Ericsson, Telstra | not pursued |  |  |
| R4-2016313 | TP for TR 37.717-11-21 to include DC\_2A\_n5A-n77A | Ericsson, Verizon, LG Electronics | approved |  |  |
| R4-2016314 | TP for TR 37.717-11-21 to include DC\_2A-13A\_n66A-n77A | Ericsson, Verizon | approved |  |  |
| R4-2016315 | TP for TR 37.717-11-21 to include DC\_2A\_n66A-n77A, DC\_2A-2A\_n66A-n77A | Ericsson, Verizon, LG Electronics | approved |  |  |
| R4-2016316 | TP for TR 37.717-11-21 to include DC\_2A-66A\_n66A-n77A | Ericsson, Verizon | approved |  |  |
| R4-2016317 | TP for TR 37.717-11-21 to include DC\_2A-66A\_n5A-n77A | Ericsson, Verizon | approved |  |  |
| R4-2016318 | TP for TR 37.717-11-21 to include DC\_13A\_n2A-n77A | Ericsson, Verizon, LG Electronics | approved |  |  |
| R4-2016319 | TP for TR 37.717-11-21 to include DC\_13A\_n5A-n48A | Ericsson, Verizon | approved |  |  |
| R4-2016320 | TP for TR 37.717-11-21 to include DC\_13A\_n48A-n66A | Ericsson, Verizon | approved |  |  |
| R4-2016321 | TP for TR 37.717-11-21 to include DC\_13A\_n66A-n77A | Ericsson, Verizon, LG Electronics | approved |  |  |
| R4-2016322 | TP for TR 37.717-11-21 to include DC\_13A-66A\_n66A-n77A | Ericsson, Verizon | approved |  |  |
| R4-2016323 | TP for TR 37.717-11-21 to include DC\_13A-66A\_n2A-n77A | Ericsson, Verizon | approved |  |  |
| R4-2016324 | TP for TR 37.717-11-21 to include DC\_13-66\_n5-n48 | Ericsson, Verizon | approved |  |  |
| R4-2016325 | TP for TR 37.717-11-21 to include DC\_66\_n2-n77 | Ericsson, Verizon | approved |  |  |
| R4-2016326 | TP for TR 37.717-11-21 to include DC\_66\_n5-n48 | Ericsson, Verizon | approved |  |  |
| R4-2016327 | TP for TR 37.717-11-21 to include DC\_66\_n5-n77 | Ericsson, Verizon, LG Electronics | approved |  |  |
| R4-2016328 | TP for TR 37.717-11-21 to include DC\_66\_n66-n77 | Ericsson, Verizon | approved |  |  |
| R4-2016329 | TP to TR 38.717-01-01 to include CA\_n2(2A) | Ericsson, Verizon | approved |  |  |
| R4-2016330 | TP to TR 38.717-01-01 to include CA\_n5(2A) | Ericsson, Verizon, MediaTek | revised |  | R4-2016679 |
| R4-2016331 | TP to TR 38.717-01-01 to include CA\_n77(3A) | Ericsson, Verizon | revised |  | R4-2016913 |
| R4-2016332 | TP to TR 38.717-01-01 to include CA\_n77(4A) | Ericsson, Verizon | withdrawn |  |  |
| R4-2016333 | TP to add CA\_n25A-n41A-n77A, CA\_n25A-n41(2A)-n77A, CA\_n25A-n41C-n77A | Ericsson, T-Mobile US | revised |  | R4-2016759 |
| R4-2016334 | TP to add CA\_n25A-n66A-n77A | Ericsson, T-Mobile US | revised |  | R4-2016760 |
| R4-2016335 | TP to add CA\_n25A-n71A-n77A | Ericsson, T-Mobile US | revised |  | R4-2016761 |
| R4-2016336 | TP to add CA\_n41A-n66A-n77A, CA\_n41(2A)-n66A-n77A, CA\_n41C-n66A-n77A | Ericsson, T-Mobile US | revised |  | R4-2016762 |
| R4-2016337 | TP to add CA\_n41A-n71A-n77A, CA\_n41(2A)-n71A-n77A, CA\_n41C-n71A-n77A | Ericsson, T-Mobile US | revised |  | R4-2016763 |
| R4-2016338 | TP to add CA\_n66A-n71A-n77A | Ericsson, T-Mobile US | revised |  | R4-2016764 |
| R4-2016339 | TP to TR 38.717-01-01 to update MSD values CA\_n71(2A) | Ericsson, T-Mobile US | approved |  |  |
| R4-2016340 | CR for editorial corrections 36.101 | Ericsson | revised |  | R4-2016795 |
| R4-2016341 | CR for editorial corrections 38.101-1 | Ericsson | revised |  | R4-2016989 |
| R4-2016342 | CR for editorial corrections 38.101-2 | Ericsson | revised |  | R4-2016838 |
| R4-2016343 | CR for editorial corrections 38.101-3 | Ericsson | revised |  | R4-2016843 |
| R4-2016344 | Views on applicability of CBM/IBM for different CA configurations | Ericsson, Sony | noted |  |  |
| R4-2016345 | CR to 38.104 on Category B OTA spurious emissions for Band n257 | Ericsson | agreed |  |  |
| R4-2016346 | CR to 38.104 on Category B OTA spurious emissions for and n257 | Ericsson | agreed |  |  |
| R4-2016347 | CR to 38.141-2 on Category B OTA spurious emissions for Band n257 | Ericsson | agreed |  |  |
| R4-2016348 | CR to 38.141-2 on Category B OTA spurious emissions for Band n257 | Ericsson | agreed |  |  |
| R4-2016349 | CR to 37.104 on Removal of additional limit for Band 1 | Ericsson | agreed |  |  |
| R4-2016350 | CR to 37.104 on Removal of additional limit for Band 1 | Ericsson | agreed |  |  |
| R4-2016351 | CR to 37.141 on Removal of additional limit for Band 1 | Ericsson | agreed |  |  |
| R4-2016352 | CR to 37.141 on Removal of additional limit for Band 1 | Ericsson | agreed |  |  |
| R4-2016353 | CR to 37.105 on Removal of additional limit for Band 1 | Ericsson | revised |  | R4-2017430 |
| R4-2016354 | CR to 37.105 on Removal of additional limit for Band 1 | Ericsson | agreed |  |  |
| R4-2016355 | CR to 37.145-1 on Removal of additional limit for Band 1 | Ericsson | agreed |  |  |
| R4-2016356 | CR to 37.145-1 on Removal of additional limit for Band 1 | Ericsson | agreed |  |  |
| R4-2016357 | CR to 37.145-2 on Removal of additional limit for Band 1 | Ericsson | revised |  | R4-2017431 |
| R4-2016358 | CR to 37.145-2 on Removal of additional limit for Band 1 | Ericsson | agreed |  |  |
| R4-2016359 | CR to 36.104 on Removal of additional limit for Band 1 | Ericsson | agreed |  |  |
| R4-2016360 | CR to 36.104 on Removal of additional limit for Band 1 | Ericsson | agreed |  |  |
| R4-2016361 | CR to 36.141 on Removal of additional limit for Band 1 | Ericsson | agreed |  |  |
| R4-2016362 | CR to 36.141 on Removal of additional limit for Band 1 | Ericsson | agreed |  |  |
| R4-2016363 | CR to 37.104 on MSR Blocking correction | Ericsson | agreed |  |  |
| R4-2016364 | CR to 37.104 on MSR Blocking correction | Ericsson | agreed |  |  |
| R4-2016365 | CR to 37.141 on MSR Blocking correction | Ericsson | agreed |  |  |
| R4-2016366 | CR to 37.141 on MSR Blocking correction | Ericsson | agreed |  |  |
| R4-2016367 | CR to 37.105 on NR+UTRA support for AAS | Ericsson | not pursued |  |  |
| R4-2016368 | CR to 37.105 on NR+UTRA support for AAS | Ericsson | withdrawn |  |  |
| R4-2016369 | Draft LS to ECC SE21 on Spurious emission limits for AAS BS in 6.425 | RAN4 | approved |  |  |
| R4-2016370 | Plane Wave Synthesizer | ROHDE & SCHWARZ | noted |  |  |
| R4-2016371 | A Survey on Memory Based PA Models | Huawei, HiSilicon | noted |  |  |
| R4-2016372 | The remaining issue on n48 DSS | Google Inc. | noted |  |  |
| R4-2016373 | CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | revised |  | R4-2017041 |
| R4-2016374 | CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel16 | Apple | revised |  | R4-2017380 |
| R4-2016375 | Draft CR on CQI reporting requirements with Table 3 | Apple | revised |  | R4-2017499 |
| R4-2016376 | Draft CR on Applicability of CQI reporting requirements with Table 3 | Apple | not pursued |  |  |
| R4-2016377 | Impact of phase variation | MVG Industries, Sony | noted |  |  |
| R4-2016378 | Accuracy requirements for MR-DC EMR (36.133) | Nokia Corporation | postponed |  |  |
| R4-2016379 | Maintenance CR on NR CGI reading in 36.133 | Nokia, Nokia Shanghai Bell | revised |  | R4-2017193 |
| R4-2016380 | Test cases for EN-DC intra-frequency CGI identification of NR neighbour cell in FR1 | Nokia, Nokia Shanghai Bell | revised |  | R4-2017198 |
| R4-2016381 | discussion on the test cases for BWP switch on multiple CCs | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016382 | Correction on IAB RRM requirements in TS 38.174 | Nokia, Nokia Shanghai Bell | revised |  | R4-2017114 |
| R4-2016383 | discussion on IAB RRM test cases | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016384 | Test cases for LTE conditional handover | Nokia, Nokia Shanghai Bell | revised |  | R4-2017308 |
| R4-2016385 | Correction on LTE conditional handover | Nokia, Nokia Shanghai Bell | revised |  | R4-2017079 |
| R4-2016386 | Accuracy requirements for MR-DC EMR (38.133) | Nokia Corporation | revised |  | R4-2017328 |
| R4-2016387 | On the high-speed train deployment scenario in FR2 | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016388 | Updates in EMR requirements | Ericsson | merged |  |  |
| R4-2016389 | Updates in EMR requirements | Ericsson | merged |  |  |
| R4-2016390 | On UE positioning measurements: RSTD | Ericsson | noted |  |  |
| R4-2016391 | UE positioning measurements: RSTD | Ericsson | revised |  | R4-2017144 |
| R4-2016392 | On UE positioning measurements: PRS-RSRP | Ericsson | noted |  |  |
| R4-2016393 | UE positioning measurements: PRS-RSRP | Ericsson | merged |  |  |
| R4-2016394 | On UE positioning measurements: UE Rx-Tx | Ericsson | noted |  |  |
| R4-2016395 | UE positioning measurements: UE Rx-Tx | Ericsson | merged |  |  |
| R4-2016396 | On CSSF for positioning measurements | Ericsson | noted |  |  |
| R4-2016397 | Correction to CSSF for positioning measurements | Ericsson | merged |  |  |
| R4-2016398 | General discussion on NR RRM positioning test cases | Ericsson | noted |  |  |
| R4-2016399 | NR RRM positioning test cases list and time plan | Ericsson | noted |  |  |
| R4-2016400 | NR RRM positioning test cases structure | Ericsson | revised |  | R4-2017152 |
| R4-2016401 | Correction to UE Rx-Tx measurement report mapping | Ericsson | endorsed |  |  |
| R4-2016402 | On PRS-RSRP measurement accuracy | Ericsson | noted |  |  |
| R4-2016403 | PRS-RSRP measurement accuracy | Ericsson | merged |  |  |
| R4-2016404 | On RSTD measurement accuracy | Ericsson | noted |  |  |
| R4-2016405 | RSTD measurement accuracy | Ericsson | merged |  |  |
| R4-2016406 | On UE Rx-Tx measurement accuracy | Ericsson | noted |  |  |
| R4-2016407 | UE Rx-Tx measurement accuracy | Ericsson | revised |  | R4-2017155 |
| R4-2016408 | On the terminology and SSB monitoring in NR-U | Ericsson | noted |  |  |
| R4-2016409 | Terminology updates for NR-U | Ericsson | revised |  | R4-2017081 |
| R4-2016410 | Terminology updates for NR-U | Ericsson | revised |  | R4-2017082 |
| R4-2016411 | On remaining issues for SCell activation in NR-U | Ericsson | noted |  |  |
| R4-2016412 | Updates in SCell activation in NR-U | Ericsson | merged |  |  |
| R4-2016413 | Updates in RLM requirements for NR-U | Ericsson | revised |  | R4-2017086 |
| R4-2016414 | Clause numbering correction | Ericsson | agreed |  |  |
| R4-2016415 | General discussion on NR-U RRM test cases | Ericsson | noted |  |  |
| R4-2016416 | NR-U RRM test case list and time plan | Ericsson | noted |  |  |
| R4-2016417 | NR-U test cases structure | Ericsson | revised |  | R4-2017092 |
| R4-2016418 | Measurement accuracy requirements for NR-U | Ericsson | revised |  | R4-2017091 |
| R4-2016419 | Measurementequirements for NR-U | Ericsson | revised |  | R4-2017305 |
| R4-2016420 | On test cases for SRS carrier-based switching in NR | Ericsson | noted |  |  |
| R4-2016421 | Missing requirements for LTE SRS carrier-based switching | Ericsson | agreed |  |  |
| R4-2016422 | Correction in NR SRS carrier-based switching requirements | Ericsson | agreed |  |  |
| R4-2016423 | On TC2 configuration (SA interruptions at NR SRS carrier-based switching) | Ericsson | noted |  | - |
| R4-2016424 | CR: Updates to OCNG pattern reference | Huawei Technologies Sweden AB | revised |  | R4-2017448 |
| R4-2016425 | CR: Updates OCNG pattern reference (Rel-16) | Huawei Technologies Sweden AB | agreed |  |  |
| R4-2016426 | LTE CA\_NS\_04 PC2 256QAM AMPR | Qualcomm Incorporated | noted |  |  |
| R4-2016427 | On Active BWP switching under cross-carrier scheduling | Ericsson | noted |  |  |
| R4-2016428 | CR 38.133 Active BWP switching with cross-carrier scheduling | Ericsson | not pursued |  |  |
| R4-2016429 | Views on CSI Reporting test cases for eMIMO | Qualcomm Incorporated | noted |  |  |
| R4-2016430 | CR to TS 37.105: addition of the OBUE applicability table, Rel-15 | Huawei | revised |  | R4-2017432 |
| R4-2016431 | CR to TS 37.145-1: addition of the OBUE applicability table, Rel-15 | Huawei | revised |  | R4-2017433 |
| R4-2016432 | CR to TS 37.145-2: addition of the OBUE applicability table, Rel-15 | Huawei | revised |  | R4-2017434 |
| R4-2016433 | On NR IAB-MT test setup and demodulation requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016434 | Parameters and simulation results on PMI reporting requirements with larger number of Tx ports | Qualcomm Incorporated | noted |  |  |
| R4-2016435 | Correction to PCMAX for contiguous intra-band EN-DC | Qualcomm Incorporated | revised |  | R4-2016845 |
| R4-2016436 | Removal of square brackets for 38.101-1 NR-U | Qualcomm Incorporated | revised |  | R4-2016799 |
| R4-2016437 | Reference sensitivity for NR-U band n96 | Qualcomm Incorporated | noted |  |  |
| R4-2016438 | Wideband capability for NR-U | Qualcomm Incorporated | noted |  |  |
| R4-2016439 | Upper limits on output power for dual PA | Qualcomm Incorporated | noted |  |  |
| R4-2016440 | Improving PC2 MSD for EN-DC and UL CA | Qualcomm Incorporated | noted |  |  |
| R4-2016441 | MSD for Band n77 PC2 combinations | Qualcomm Incorporated | noted |  |  |
| R4-2016442 | Replacement of void sub-clauses | Qualcomm Incorporated | not pursued |  | R4-2016835 |
| R4-2016443 | On NR IAB general demodulation requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016444 | On NR IAB-DU demodulation requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2016445 | Views on URLLC Ultra-low BLER CSI Reporting Test Cases | Qualcomm Incorporated | noted |  |  |
| R4-2016446 | Revised V2X FRC tables | Qualcomm Incorporated | not pursued |  |  |
| R4-2016447 | Revision of inter-band V2X con-currency table for V2X\_n71A\_n47A | Qualcomm Incorporated | not pursued |  |  |
| R4-2016448 | CR: Correction on OCNG pattern | Qualcomm, Inc. | revised |  | R4-2017449 |
| R4-2016449 | CR: Correction on OCNG pattern | Qualcomm, Inc. | revised |  | R4-2017450 |
| R4-2016450 | CR for 36.101: Corrections for UL CA\_41D | T-Mobile USA | agreed |  |  |
| R4-2016451 | CR to for 38.101-1: CA uplink power clarification | T-Mobile USA | agreed |  |  |
| R4-2016452 | 35 and 45 MHz CH BW Release Independence | T-Mobile USA, TELUS, Bell Mobility, AT&T | noted |  |  |
| R4-2016453 | An alternative to creating new BCSs | T-Mobile USA, Deutsche Telekom, AT&T, TELUS, Bell Mobility, Rogers Communications, Telstra, Telecom Italia, KDDI, Vodafone, BT plc, Ericsson | noted |  |  |
| R4-2016454 | Draft CR for 38.101-1: Introduction of BCS4 | T-Mobile USA | not pursued |  |  |
| R4-2016455 | Use of 5 MHz overlapping channel BWs to cover spectrum blocks between 5 and 10 MHz | T-Mobile USA | noted |  |  |
| R4-2016456 | Revised SID: Study on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths | T-Mobile USA, Ericsson | noted |  |  |
| R4-2016457 | NR-CA and NR-DC 3 band requests and fallbacks | T-Mobile USA, TELUS, Bell Mobility, AT&T | noted |  |  |
| R4-2016458 | CR for 38.101-1: Editorial corrections | T-Mobile USA | agreed |  |  |
| R4-2016459 | CR for 38.101-2: IBB and ACS corrections | T-Mobile USA | agreed |  |  |
| R4-2016460 | Mirror CR for 38.101-2: IBB and ACS corrections | T-Mobile USA | agreed |  |  |
| R4-2016461 | Revised WID: introduction of NR 47 GHz band | T-Mobile USA, Dish Network | noted |  |  |
| R4-2016462 | Views on URLLC High BLER Demodulation Test Cases | Qualcomm Incorporated | noted |  |  |
| R4-2016463 | Views on Power Imbalance Tests | Qualcomm Incorporated | noted |  |  |
| R4-2016464 | NR Sidelink Operating Bands | AT&T, FirstNet | noted |  |  |
| R4-2016465 | Discussion on Single Carrier MPR versus Architecture | Skyworks Solutions Inc. | noted |  |  |
| R4-2016466 | CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | revised |  | R4-2017577 |
| R4-2016467 | Mirror CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | agreed |  |  |
| R4-2016468 | Simulation results for NR HST UL TA | Intel Corporation | noted |  |  |
| R4-2016469 | On simultaneous Rx/Tx UE capability | Huawei, HiSilicon | noted |  |  |
| R4-2016470 | CR for TS 38.101-3: correction CR for simultaneous Tx/Rx operation (R15) | Huawei, HiSilicon | not pursued |  |  |
| R4-2016471 | CR for TS 38.101-1: correction CR for simultaneous Tx/Rx operation (R16) | Huawei, HiSilicon | withdrawn |  |  |
| R4-2016472 | CR for TS 38.101-3: correction CR for simultaneous Tx/Rx operation (R15) | Huawei, HiSilicon | not pursued |  |  |
| R4-2016473 | CR for TS 38.101-3: correction CR for simultaneous Tx/Rx operation (R16) | Huawei, HiSilicon | withdrawn |  |  |
| R4-2016474 | draft CR for 38.101-1 NR V2X FRC | Huawei, HiSilicon | revised |  | R4-2017822 |
| R4-2016475 | On NR V2X switching period | Huawei, HiSilicon | noted |  |  |
| R4-2016476 | draft correction CR for TS 38.101-3: NR V2X con-current operation | Huawei, HiSilicon | not pursued |  |  |
| R4-2016477 | On Tx diversity requirements | Huawei, HiSilicon | noted |  |  |
| R4-2016478 | CR for TS 38.101-1 Tx diversity requirements | Huawei, HiSilicon | not pursued |  |  |
| R4-2016479 | Discussion and draft reply LS on EN-DC power class | Huawei, HiSilicon | noted |  |  |
| R4-2016480 | On MPR for TxD and UL MIMO | Huawei, HiSilicon | noted |  |  |
| R4-2016481 | CR for TS 38.101-1: correction of Pi/2 BPSK | Huawei, HiSilicon | not pursued |  | R4-2016813 |
| R4-2016482 | CR for TS 38.101-3: correction of power class for EN-DC | Huawei, HiSilicon | not pursued |  |  |
| R4-2016483 | CR for TS 38.101-1: harmonic MSD for CA\_n41-n79 | Huawei, HiSilicon | not pursued |  | R4-2016836 |
| R4-2016484 | On Rel-17 sidelink enhancement | Huawei, HiSilicon | noted |  |  |
| R4-2016485 | CR for 38.101-3 Correction on EN-DC synchronous carriers (R15) | Huawei, HiSilicon | revised |  | R4-2016794 |
| R4-2016486 | CR for 38.101-3 Correction on EN-DC synchronous carriers (R16) | Huawei, HiSilicon | agreed |  |  |
| R4-2016487 | On UE capability for distinguishing EN-DC implementation capable for different deployment scenarios | Huawei, HiSilicon | noted |  |  |
| R4-2016488 | Introduction of completed R17 2DL2UL band combinations to TS 36.101 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2016489 | Revised WID for LTE inter-band CA for 2 bands DL with 2 bands UL | Huawei, HiSilicon | withdrawn |  |  |
| R4-2016490 | CR for TS 38.101-1: correction of delta Tib for UE supporting multiple band combinations (R15) | Huawei, HiSilicon | agreed |  |  |
| R4-2016491 | CR for TS 38.101-1: correction of delta Tib for UE supporting multiple band combinations (R16) | Huawei, HiSilicon | agreed |  |  |
| R4-2016492 | CR for TS 38.101-3: correction of delta Tib for UE supporting multiple band combinations (R15) | Huawei, HiSilicon | not pursued |  |  |
| R4-2016493 | CR for TS 38.101-3: correction of delta Tib for UE supporting multiple band combinations (R16) | Huawei, HiSilicon | withdrawn |  |  |
| R4-2016494 | Update of configured transmitted power to remove ambiguity in TL,C (Rel-15) | Huawei, HiSilicon | not pursued |  |  |
| R4-2016495 | Update of configured transmitted power to remove ambiguity in TL,C (Rel-16) | Huawei, HiSilicon | withdrawn |  |  |
| R4-2016496 | CR for TS 38.101-3: correction of spurious emission band UE co-existence (R15) | Huawei, HiSilicon | revised |  | R4-2016791 |
| R4-2016497 | CR for TS 38.101-3: correction of spurious emission band UE co-existence (R16) | Huawei, HiSilicon | revised |  | R4-2017816 |
| R4-2016498 | Adding delta TIB requirement for DC\_2-7-7-13\_n66 | Huawei, HiSilicon | revised |  | R4-2016844 |
| R4-2016499 | CR to 38.101-2: Frequency separation class update | Qualcomm Incorporated | not pursued |  |  |
| R4-2016500 | CR on FDD HST Single-Tap and Multipath Fading Requirements | Qualcomm Incorporated | revised |  | R4-2017547 |
| R4-2016501 | NRU small enhancement and exception sheet leftovers beyond RAN4#97e | Skyworks Solutions Inc. | noted |  |  |
| R4-2016502 | TS 37.145-2: Corrections OTA SEM, OTA Rx intermod and OTA ACS | Ericsson | agreed |  |  |
| R4-2016503 | TS 37.145-2: Corrections OTA SEM, OTA Rx intermod and OTA ACS | Ericsson | agreed |  |  |
| R4-2016504 | CR on FR1 PDSCH Mapping Type B and Processing Capability 2 Requirements | Qualcomm Incorporated | revised |  | R4-2017516 |
| R4-2016505 | General NR positioning measurement requirements | Qualcomm Incorporated | noted |  |  |
| R4-2016506 | gNB requirements for positioning | Qualcomm Incorporated | noted |  |  |
| R4-2016507 | PRS-RSTD measurement period requirements | Qualcomm Incorporated | noted |  |  |
| R4-2016508 | UE Rx-Tx time difference measurement period requirements | Qualcomm Incorporated | noted |  |  |
| R4-2016509 | PRS-RSRP measurement accuracy requirements | Qualcomm Incorporated | noted |  |  |
| R4-2016510 | PRS-RSTD measurement accuracy requirements | Qualcomm Incorporated | noted |  |  |
| R4-2016511 | UE Rx-Tx time difference measurement accuracy requirements | Qualcomm Incorporated | noted |  |  |
| R4-2016512 | CR on FR2 PDSCH CA Requirements | Qualcomm Incorporated | agreed |  |  |
| R4-2016513 | CR for intra-band UL CA non-contiguous CA requirement | Huawei, HiSilicon | revised |  | R4-2016815 |
| R4-2016514 | on FR1 UL CA DC location | Huawei, HiSilicon | noted |  |  |
| R4-2016515 | on FR1 intra-band UL CA Pcmax | Huawei, HiSilicon | noted |  |  |
| R4-2016516 | On transient period UE capability | Huawei, HiSilicon | noted |  |  |
| R4-2016517 | CR on TS 38.101-1 time mask for shorter transient | Huawei, HiSilicon | revised |  | R4-2016829 |
| R4-2016518 | CR on beam correspondence side condition | Huawei, HiSilicon | revised |  | R4-2016823 |
| R4-2016519 | CR for inter-band NC DL CA Rrefsens | Huawei, HiSilicon | revised |  | R4-2016828 |
| R4-2016520 | CR on FR2 intra-band NC DL CA refsens | Huawei, HiSilicon | withdrawn |  |  |
| R4-2016521 | CR for TS 38.101-1 Pcmax | Huawei, HiSilicon | not pursued |  |  |
| R4-2016522 | CR on TS 38.101-1 Pcmax | Huawei, HiSilicon | withdrawn |  |  |
| R4-2016523 | On Rel-17 inter band DL CA\_FR2 | Huawei, HiSilicon | noted |  |  |
| R4-2016524 | On channel space for CA | Huawei, HiSilicon | noted |  |  |
| R4-2016525 | CR on channel space for CA | Huawei, HiSilicon | not pursued |  |  |
| R4-2016526 | CR for 38.101-1 channel space for CA\_Rel16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2016527 | CR on channel space for CA | Huawei, HiSilicon | not pursued |  |  |
| R4-2016528 | CR for 38.101-2 channel space for CA\_Rel16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2016529 | on new FR2 FWA UE RF requirement | Huawei, HiSilicon | noted |  |  |
| R4-2016530 | Draft CR for FR2 FWA RF requirements | Huawei, HiSilicon | not pursued |  |  |
| R4-2016531 | on 5MHz AMPR for NS\_38 | Huawei, HiSilicon | noted |  |  |
| R4-2016532 | on FR2 EESS protection emission requirement | Huawei, HiSilicon | noted |  |  |
| R4-2016533 | on PN model for 60GHz+reply LS RAN1 | Huawei, HiSilicon | noted |  |  |
| R4-2016534 | CR on correction for AMPR NS\_38,NS\_40 and NS\_41 | Huawei, HiSilicon | revised |  | R4-2016782 |
| R4-2016535 | CR for 38.101-1 on corrections for AMPR-Rel-16 | Huawei, HiSilicon | agreed |  |  |
| R4-2016536 | on gaps for self-calibration and monitoring | Huawei, HiSilicon | noted |  |  |
| R4-2016537 | on intra-band CA HPUE RF architecture | Huawei, HiSilicon | noted |  |  |
| R4-2016538 | on RF requirement for NR FR2 HST | Huawei, HiSilicon | noted |  |  |
| R4-2016539 | Simulation assumptions for NR FR2 MIMO OTA | Huawei, HiSilicon | noted |  |  |
| R4-2016540 | work plan for Rel-17 FR1 UE RF enhancement | Huawei, HiSilicon | revised |  | R4-2016908 |
| R4-2016541 | Introduction of completed R17 3DL band combinations to TS 36.101 | Huawei, HiSilicon | agreed |  |  |
| R4-2016542 | Revised WID for LTE inter-band CA for 3 bands DL with 1 bands UL | Huawei, HiSilicon | endorsed |  |  |
| R4-2016543 | New basket WID NR\_PC2\_CA\_R17\_intra | Huawei, HiSilicon | not treated |  |  |
| R4-2016544 | TP to 38.827 on channel model rotations | Huawei, HiSilicon | not pursued |  | - |
| R4-2016545 | draft LS to RAN2 on Rel-15 frequency separation class update | Qualcomm Incorporated | noted |  |  |
| R4-2016546 | pCR to 38.827 on base station beamforming configuration | Huawei, HiSilicon | not pursued |  | - |
| R4-2016547 | RRM requirements for eMTC UE in RRC\_INACTIVE state | Qualcomm Incorporated | merged |  |  |
| R4-2016548 | Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA | Qualcomm Incorporated | revised |  | R4-2017066 |
| R4-2016549 | Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA | Qualcomm Incorporated | agreed |  |  |
| R4-2016550 | Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA | Qualcomm Incorporated | agreed |  |  |
| R4-2016551 | Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA | Qualcomm Incorporated | agreed |  |  |
| R4-2016552 | Test cases for DL channel quality report accuracy for eMTC UE | Qualcomm Incorporated | endorsed |  |  |
| R4-2016553 | Test cases for DLchannel quality report accuracy in RRC\_CONNECTED for UE Cat-NB1 Standalone mode | Qualcomm Incorporated | revised |  | R4-2017077 |
| R4-2016554 | Introduction of intra-frequency sync and async LTE DAPS HO test cases | Qualcomm Incorporated | agreed |  |  |
| R4-2016555 | Introduction of intra-frequency sync and async DAPS HO test cases in FR1 | Qualcomm Incorporated | revised |  | R4-2017099 |
| R4-2016556 | Revision of NR positioning measurement requirements applicability | Qualcomm Incorporated | postponed |  | - |
| R4-2016557 | Revision of PRS-RSRP measurement period requirements | Qualcomm Incorporated | merged |  |  |
| R4-2016558 | Revision of PRS-RSTD measurement period requirements | Qualcomm Incorporated | merged |  |  |
| R4-2016559 | Revision of UE Rx-Tx time difference measurement period requirements and applicability | Qualcomm Incorporated | merged |  |  |
| R4-2016560 | Further discusison on UL gaps for self-calibration and monitoring | Apple | noted |  |  |
| R4-2016561 | FR1 MIMO OTA channel model validation results | CAICT,Keysight,vivo | noted |  |  |
| R4-2016562 | Views on test methods for high DL power and low UL power TCs | ROHDE & SCHWARZ | noted |  |  |
| R4-2016563 | Definition of Available Reference Cell for Timing Requirements in NR-U | Qualcomm Incorporated | noted |  |  |
| R4-2016564 | Remaining issues on measurement requirements in NR-U | Qualcomm Incorporated | noted |  |  |
| R4-2016565 | Remaining Issues On SCell activation and deactivation requirements in NR-U | Qualcomm Incorporated | noted |  |  |
| R4-2016566 | RSSI Measurement Accuracy Requirements in NR-U | Qualcomm Incorporated | noted |  |  |
| R4-2016567 | NR-U RRM Performance Work Plan and Work Split | Qualcomm Incorporated | revised |  | R4-2017332 |
| R4-2016568 | Views on polarization basis mismatch | ROHDE & SCHWARZ | noted |  |  |
| R4-2016569 | EVM Measurement for 2-Layer Uplink MIMO | Lenovo, Motorola Mobility | noted |  |  |
| R4-2016570 | Dormant and Non-dormant BWP switching | Qualcomm Incorporated | noted |  |  |
| R4-2016571 | Performance requirements for Dormant SCell | Qualcomm Incorporated | noted |  |  |
| R4-2016572 | Performance requirements for BWP switching on multiple CCs | Qualcomm Incorporated | noted |  |  |
| R4-2016573 | Early measurement reporting in MR-DC | Qualcomm Incorporated | noted |  |  |
| R4-2016574 | Multi-SCell activation for FR1 intra-band contiguous CA | Qualcomm Incorporated | noted |  |  |
| R4-2016575 | Staring point of an Interruption window at Direct SCell activation | Qualcomm Incorporated | noted |  |  |
| R4-2016576 | BM resources for FR2 Inter-band IBM UEs | Qualcomm Incorporated | noted |  |  |
| R4-2016577 | Performance requirements for FR2 Inter-band IBM UEs | Qualcomm Incorporated | noted |  |  |
| R4-2016578 | CR to DMRS position in UL RMC for FR1 | Qualcomm Incorporated | revised |  | R4-2016783 |
| R4-2016579 | CR to DMRS position in UL RMC for FR2 | Qualcomm Incorporated | revised |  | R4-2016787 |
| R4-2016580 | CR to TCI activation in FR1 | Qualcomm Incorporated | merged |  |  |
| R4-2016581 | CR to SSB-less SCell activation delay requirement for deactivated FR1 SCell | Qualcomm Incorporated | postponed |  |  |
| R4-2016582 | Missing TRS Configurations in Test Cases | Qualcomm Incorporated | noted |  |  |
| R4-2016583 | CR to Multi-SCell activation for FR1 intra-band contiguous CA | Qualcomm Incorporated | revised |  | R4-2017207 |
| R4-2016584 | CR to Staring point of an Interruption window at Direct SCell activation | Qualcomm Incorporated | agreed |  | - |
| R4-2016585 | CR to MAC-CE based TCI State Switching requirements for NR-U | Qualcomm Incorporated | merged |  |  |
| R4-2016586 | CR for 38.827 on corrections | Huawei, HiSilicon | revised |  | R4-2017641 |
| R4-2016587 | Correction to RSS based measurement requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2017070 |
| R4-2016588 | Discussion on MIMO OTA framework | Huawei, HiSilicon | noted |  |  |
| R4-2016589 | Discussion on MIMO OTA open issues | Huawei, HiSilicon | noted |  |  |
| R4-2016590 | CR for intra-band NC DL CA Rrefsens | Huawei, HiSilicon | not pursued |  |  |
| R4-2016591 | Interruption windows and applicability of Scell activation/deactivation requirements for SCells operating with CCA | Qualcomm Incorporated | revised |  | R4-2017084 |
| R4-2016592 | Editorial CR to change | Qualcomm Incorporated | withdrawn |  |  |
| R4-2016593 | Editorial CR to change | Qualcomm Incorporated | withdrawn |  |  |
| R4-2016594 | Scope of test cases for IAB-MTs | ZTE Corporation, Qualcomm Incorporated | noted |  |  |
| R4-2016595 | on UE capability for intra-band ENDC and LS to RAN2 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2016596 | CR for 38.141-1 Introduction of conformance testing for NR HST PRACH under fading channel | Huawei, HiSilicon | revised |  | R4-2017555 |
| R4-2016597 | CR for 38.141-2 Introduction of conformance testing for NR HST PRACH under fading channel | Huawei, HiSilicon | revised |  | R4-2017556 |
| R4-2016598 | FREQUENCY ARRANGEMENTS FOR IMT IN THE BAND 470 | APT Wireless Group | noted | - | - |
| R4-2016599 | RAN4#97-e E-meeting Arrangements and Guidelines | RAN4 Chair (Apple) | approved | - | - |
| R4-2016600 | 35M\_45M AMPR, MPR, REFSENS | Qualcomm Incorporated | noted | R4-2014173 | - |
| R4-2016601 | Uplink co-existence simulation results for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz | Qualcomm Incorporated | noted | R4-2016237 | - |
| R4-2016602 | RAN4 Meeting Efficiency Improvements | RAN4 Leadership | endorsed | - | - |
| R4-2016603 | Email discussion summary for [97e][101] NR\_NewRAT\_SysParameters | Moderator (ZTE) | revised | - | R4-2016945 |
| R4-2016604 | Email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 | Moderator (Nokia) | revised | - | R4-2016946 |
| R4-2016605 | Email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 | Moderator (Apple) | revised | - | R4-2016947 |
| R4-2016606 | Email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 | Moderator (Huawei) | revised | - | R4-2016948 |
| R4-2016607 | Email discussion summary for [97e][105] LTE\_Maintenance | Moderator (Skyworks) | revised | - | R4-2016949 |
| R4-2016608 | Email discussion summary for [97e][106] NR\_unlic\_SysParameters | Moderator (Ericsson) | revised | - | R4-2016950 |
| R4-2016609 | Email discussion summary for [97e][107] NR\_unlic\_UE\_RF | Moderator (Qualcomm) | revised | - | R4-2016951 |
| R4-2016610 | Email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF | Moderator (LG Electronics) | revised | - | R4-2016952 |
| R4-2016611 | Email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent | Moderator (Huawei) | revised | - | R4-2016953 |
| R4-2016612 | Email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF | Moderator (Ericsson) | revised | - | R4-2016954 |
| R4-2016613 | Email discussion summary for [97e][111] NR\_eMIMO\_UE\_RF | Moderator (Samsung) | revised | - | R4-2016955 |
| R4-2016614 | Email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 | Moderator (Huawei) | revised | - | R4-2016956 |
| R4-2016615 | Email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 | Moderator (Nokia) | revised | - | R4-2016957 |
| R4-2016616 | Email discussion summary for [97e][114] NR\_transient\_period | Moderator (CMCC) | revised | - | R4-2016958 |
| R4-2016617 | Email discussion summary for [97e][115] NR\_TxD | Moderator (vivo) | revised | - | R4-2016959 |
| R4-2016618 | Email discussion summary for [97e][116] NR\_R16\_Maintenance | Moderator (OPPO) | revised | - | R4-2016960 |
| R4-2016619 | Email discussion summary for [97e][117] R16\_UE\_ feature | Moderator (CMCC) | revised | - | R4-2016961 |
| R4-2016620 | Email discussion summary for [97e][118] NR\_n48\_LTE\_48\_coex | Moderator (Apple) | revised | - | R4-2016962 |
| R4-2016621 | Email discussion summary for [97e][119] NR\_Baskets\_Part\_1 | Moderator (Nokia) | noted | - | - |
| R4-2016622 | Email discussion summary for [97e][120] NR\_Baskets\_Part\_2 | Moderator (Nokia) | noted | - | - |
| R4-2016623 | Email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL | Moderator (China Telecom) | revised | - | R4-2016963 |
| R4-2016624 | Email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL | Moderator (China Telecom) | revised | - | R4-2016964 |
| R4-2016625 | Email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD | Moderator (China Unicom) | revised | - | R4-2016965 |
| R4-2016626 | Email discussion summary for [97e][124] NR\_bands\_R17\_BWs | Moderator (Ericsson) | revised | - | R4-2016966 |
| R4-2016627 | Email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW | Moderator (Huawei) | revised | - | R4-2016967 |
| R4-2016628 | Email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos | Moderator (CATT) | revised | - | R4-2016968 |
| R4-2016629 | Email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 | Moderator (Softbank) | revised | - | R4-2016969 |
| R4-2016630 | Email discussion summary for [97e][128] NR\_n13 | Moderator (Huawei) | revised | - | R4-2016970 |
| R4-2016631 | Email discussion summary for [97e][129] NR\_SUL\_bands | Moderator (CMCC) | noted | - | - |
| R4-2016632 | Email discussion summary for [97e][130] NR\_47GHz\_Band | Moderator (Nokia) | revised | - | R4-2016971 |
| R4-2016633 | Email discussion summary for [97e][131] NR\_LTE\_band\_n24 | Moderator (Ligado Networks) | revised | - | R4-2016972 |
| R4-2016634 | Email discussion summary for [97e][132] FS\_6425\_10500MHz \_NR | Moderator (Ericsson) | revised | - | R4-2016973 |
| R4-2016635 | Email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 | Moderator (Huawei) | revised | - | R4-2016974 |
| R4-2016636 | Email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 | Moderator (China Telecom) | revised | - | R4-2016975 |
| R4-2016637 | Email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 | Moderator (Nokia) | revised | - | R4-2016976 |
| R4-2016638 | Email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2 | Moderator (Qualcomm) | revised | - | R4-2016977 |
| R4-2016639 | Email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3 | Moderator (Apple) | revised | - | R4-2016978 |
| R4-2016640 | Email discussion summary for [97e][138] NR\_HST\_FR2\_enh | Moderator (Samsung) | revised | - | R4-2016979 |
| R4-2016641 | Email discussion summary for [97e][139] NRSL\_enh | Moderator (LG Electronics) | revised | - | R4-2016980 |
| R4-2016642 | Email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 | Moderator (Qualcomm) | revised | - | R4-2016981 |
| R4-2016643 | Email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 | Moderator (Intel) | revised | - | R4-2016982 |
| R4-2016644 | Email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util | Moderator (Ericsson) | revised | - | R4-2016983 |
| R4-2016645 | Email discussion summary for [97e][143] LTE\_Baskets | Moderator (Ericsson) | noted | - | - |
| R4-2016646 | Email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 | Moderator (Ercisson) | revised | - | R4-2016984 |
| R4-2016647 | Email discussion summary for [97e][145] FS\_LTE\_NR\_HPUE\_FWVM | Moderator (Nokia) | revised | - | R4-2016985 |
| R4-2016648 | Email discussion summary for [97e][146] BC\_simplification | Moderator (NTT DOCOMO) | revised | - | R4-2016986 |
| R4-2016649 | TP to add 3DL/1UL CA\_n25A-n41A-n77A, CA\_n25A-n41(2A)-n77A, CA\_n25A-n41C-n77A | Ericsson, T-Mobile US | approved | - | - |
| R4-2016650 | TP to add 3DL/1UL CA\_n25A-n66A-n77A | Ericsson, T-Mobile US | approved | - | - |
| R4-2016651 | TP to add 3DL/1UL CA\_n25A-n71A-n77A | Ericsson, T-Mobile US | approved | - | - |
| R4-2016652 | TP to add 3DL/1UL CA\_n41A-n66A-n77A, CA\_n41(2A)-n66A-n77A, CA\_n41C-n66A-n77A | Ericsson, T-Mobile US | approved | - | - |
| R4-2016653 | TP to add 3DL/1UL CA\_n41A-n71A-n77A, CA\_n41(2A)-n71A-n77A, CA\_n41C-n71A-n77A | Ericsson, T-Mobile US | approved | - | - |
| R4-2016654 | TP to add 3DL/1UL CA\_n66A-n71A-n77A | Ericsson, T-Mobile US | approved | - | - |
| R4-2016655 | TP for 37.717-11-11 for DC\_8\_n2 | Huawei,HiSilicon | approved | R4-2014030 | - |
| R4-2016656 | TP for 37.717-21-11 for DC\_20-32\_n1 | Huawei,HiSilicon | approved | R4-2014035 | - |
| R4-2016657 | TP for 37.717-41-11 for DC\_2-5-7-66\_n66 | Huawei,HiSilicon | approved | R4-2014044 | - |
| R4-2016658 | TP to TR 37.717-11-11: DC\_18A\_n28A | KDDI Corporation | approved | R4-2014070 | - |
| R4-2016659 | TP for TR 37.717-21-11 DC\_13-48\_n77 | Samsung, Verizon | withdrawn | - | - |
| R4-2016660 | TP for TR 37.717-21-11 DC\_13-46\_n261 | Samsung, Verizon | approved | R4-2014140 | - |
| R4-2016661 | DC\_XXA\_71A\_n71A REFSENS relaxation | Qualcomm Incorporated | noted | R4-2014172 | - |
| R4-2016662 | TP update for TR 37.717-21-11: EN-DC\_1-11\_n28 | SoftBank Corp., LG Electronics | approved | R4-2014614 | - |
| R4-2016663 | TP to TR 37.717-11-11: DC\_18A\_n41A | KDDI Corporation | approved | R4-2014810 | - |
| R4-2016664 | TP for DC\_1-18\_n28 | KDDI Corporation | approved | R4-2014952 | - |
| R4-2016665 | TP for DC\_1-18\_n41 | KDDI Corporation | approved | R4-2014953 | - |
| R4-2016666 | MSD for CA\_n71(2A) | MediaTek Inc. | noted | R4-2015069 | - |
| R4-2016667 | TP for 37.717-11-11 to introduce DC\_7\_n2A | Nokia | approved | R4-2015221 | - |
| R4-2016668 | TP for 37.717-21-11 to introduce DC\_5A-7A\_n7A | Nokia | approved | R4-2015225 | - |
| R4-2016669 | TP for 37.717-21-11 to introduce DC\_28A-66A\_n7A | Nokia, ZTE | approved | R4-2015227 | - |
| R4-2016670 | TP for 37.717-11-11 to introduce DC\_71A\_n71A | Nokia, T-Mobile | approved | R4-2015245 | - |
| R4-2016671 | TP for 37.717-21-11 to introduce DC\_2A-71A\_n71A and DC\_66A-71A\_n71A | Nokia, T-Mobile | withdrawn | - | - |
| R4-2016672 | TP to TR 37.717-41-11 DC\_1A-3A-7A-40C\_n78A | Huawei, HiSilicon | approved | R4-2015278 | - |
| R4-2016673 | TP to TR 37.717-41-11 DC\_1A-3A-8A-40C\_n78A | Huawei, HiSilicon, Nokia | approved | R4-2015279 | - |
| R4-2016674 | TP to TR 37.717-41-11 DC\_1A-7A-8A-40C\_n78A | Huawei, HiSilicon | approved | R4-2015280 | - |
| R4-2016675 | TP to TR 37.717-41-11 DC\_3A-7A-8A-40C\_n78A | Huawei, HiSilicon | approved | R4-2015281 | - |
| R4-2016676 | TP for TR 37.717-11-11: DC\_12\_n71 | Huawei, HiSilicon | withdrawn | - | - |
| R4-2016677 | TP for TR 37.717-41-11:DC\_3A-7A-8A-40A\_n1A/DC\_3A-7A-8A-40C\_n1A | Huawei, HiSilicon | approved | R4-2015419 | - |
| R4-2016678 | TP for TR 37.717-21-11: DC\_7-66\_n77 | Huawei, HiSilicon, Bell Mobility, Telus | withdrawn | - | - |
| R4-2016679 | TP to TR 38.717-01-01 to include CA\_n5(2A) | Ericsson, Verizon, MediaTek | approved | R4-2016330 | - |
| R4-2016680 | TP for TR 38.717-02-01 CA\_n41-n78 | Samsung, KDDI | approved | R4-2014111 | - |
| R4-2016681 | draft CR for NR inter-band CA for 2 bands DL | Nokia, T-Mobile USA | endorsed | R4-2014522 | - |
| R4-2016682 | TP for TR 38.717-02-01: CA\_n41-n77 | Nokia, T-Mobile USA | approved | R4-2014524 | - |
| R4-2016683 | TP for TR 38.717-02-01: CA\_n71A-n77A | Nokia, T-Mobile USA | approved | R4-2014525 | - |
| R4-2016684 | TP for TR 37.717-02-01: CA\_n5-n48 | Verizon Denmark | approved | R4-2014876 | - |
| R4-2016685 | draftCR for CA\_n66(2A)-n77A, CA\_n66A-n77(2A) and CA\_n66(2A)-n77(2A) BCS1 | Nokia, Nokia Shanghai Bell | endorsed | R4-2015075 | - |
| R4-2016686 | TP to TR 38.717-02-01: CA\_n5-n25 | Nokia, Nokia Shanghai Bell | approved | R4-2015076 | - |
| R4-2016687 | TP to TR 38.717-02-01: CA\_n25-n77 | Nokia, Nokia Shanghai Bell | approved | R4-2015077 | - |
| R4-2016688 | DraftCR for 38.101-1 to add BCS1 for CA\_n20A-n28A | Huawei, HiSilicon | withdrawn | - | - |
| R4-2016689 | TP for TR 38.717-02-01: to add UL configuration for CA\_n78A-n79A and CA\_n78(2A)-n79A\_BCS0 | Huawei, HiSilicon | approved | R4-2015428 | - |
| R4-2016690 | TP for TR 38.717-02-01: CA\_n8A-n28A | Huawei, HiSilicon | approved | R4-2015429 | - |
| R4-2016691 | TP for TR 38.717-02-01: CA\_n3A-n7A | Huawei, HiSilicon | approved | R4-2015430 | - |
| R4-2016692 | DraftCR to 38.101-3: Introduce inter-band CA and DC configurations including FR2 | Verizon Denmark | endorsed | R4-2014843 | - |
| R4-2016693 | Draft CR for 38.101-3 to add n78C in DC\_n78-n257 | SK Telecom, Samsung, Ericsson, Nokia, LGE | withdrawn | - | - |
| R4-2016694 | TP for TR 37.717-11-21 DC\_1-3\_n3-n41 | Samsung, KDDI | approved | R4-2014074 | - |
| R4-2016695 | TP for TR 37.717-11-21 DC\_1-3\_n3-n77 | Samsung, KDDI | approved | R4-2014075 | - |
| R4-2016696 | TP for TR 37.717-11-21 DC\_1-3\_n3-n78 | Samsung, KDDI | approved | R4-2014076 | - |
| R4-2016697 | TP for TR 37.717-11-21 DC\_1-3-18\_n3-n77 | Samsung, KDDI | approved | R4-2014078 | - |
| R4-2016698 | TP for TR 37.717-11-21 DC\_1-3-41\_n3-n41 | Samsung, KDDI | approved | R4-2014080 | - |
| R4-2016699 | TP for TR 37.717-11-21 DC\_1-3-41\_n3-n77 | Samsung, KDDI | approved | R4-2014081 | - |
| R4-2016700 | TP for TR 37.717-11-21 DC\_1-3-41\_n3-n78 | Samsung, KDDI | approved | R4-2014082 | - |
| R4-2016701 | TP for TR 37.717-11-21 DC\_1-3-41\_n41-n77 | Samsung, KDDI | withdrawn | - | - |
| R4-2016702 | TP for TR 37.717-11-21 DC\_1-3-41\_n41-n78 | Samsung, KDDI | withdrawn | - | - |
| R4-2016703 | TP for TR 37.717-11-21 DC\_1-41\_n3-n41 | Samsung, KDDI | withdrawn | - | - |
| R4-2016704 | TP for TR 37.717-11-21 DC\_1-41\_n41-n77 | Samsung, KDDI | withdrawn | - | - |
| R4-2016705 | TP for TR 37.717-11-21 DC\_1-41\_n41-n78 | Samsung, KDDI | withdrawn | - | - |
| R4-2016706 | TP for TR 37.717-11-21 DC\_3\_n3-n41 | Samsung, KDDI | approved | R4-2014091 | - |
| R4-2016707 | TP for TR 37.717-11-21 DC\_3-18\_n3-n77 | Samsung, KDDI | approved | R4-2014093 | - |
| R4-2016708 | TP for TR 37.717-11-21 DC\_3-41\_n3-n41 | Samsung, KDDI | approved | R4-2014095 | - |
| R4-2016709 | TP for TR 37.717-11-21 DC\_3-41\_n3-n77 | Samsung, KDDI | approved | R4-2014096 | - |
| R4-2016710 | TP for TR 37.717-11-21 DC\_3-41\_n3-n78 | Samsung, KDDI | approved | R4-2014097 | - |
| R4-2016711 | TP for TR 37.717-11-21 DC\_3-41\_n41-n77 | Samsung, KDDI | withdrawn | - | - |
| R4-2016712 | TP for TR 37.717-11-21 DC\_3-41\_n41-n78 | Samsung, KDDI | withdrawn | - | - |
| R4-2016713 | TP for TR 37.717-11-21 DC\_41\_n3-n41 | Samsung, KDDI | withdrawn | - | - |
| R4-2016714 | TP for TR 37.717-11-21 DC\_41\_n41-n77 | Samsung, KDDI | approved | R4-2014101 | - |
| R4-2016715 | TP for TR 37.717-11-21 DC\_41\_n41-n78 | Samsung, KDDI | approved | R4-2014102 | - |
| R4-2016716 | TP for TR 37.717-11-21 DC\_66\_n38-n66 | Samsung, TELUS, Bell mobility | approved | R4-2014127 | - |
| R4-2016717 | TP for DC\_19\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC., MediaTek Inc. | approved | R4-2014608 | - |
| R4-2016718 | TP for DC\_19\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC., MediaTek Inc. | approved | R4-2014610 | - |
| R4-2016719 | TP for TR 37.717-11-21: EN-DC\_11\_n3-n77 | SoftBank Corp. | approved | R4-2014647 | - |
| R4-2016720 | TP for TR 37.717-11-21: DC\_41A\_n28A-n41A | KDDI Corporation | approved | R4-2014812 | - |
| R4-2016721 | TP for TR 37.717-11-21: EN-DC\_1-3-41\_n28-n41 | KDDI Corporation | approved | R4-2014851 | - |
| R4-2016722 | TP for TR 37.717-11-21: DC\_1A-41A\_n28A-n41A | KDDI Corporation | approved | R4-2014853 | - |
| R4-2016723 | TP for TR 37.717-11-21: DC\_3A-18A\_n3A-n41A | KDDI Corporation | approved | R4-2014878 | - |
| R4-2016724 | TP for TR 37.717-11-21: DC\_3A-41A\_n28A-n41A | KDDI Corporation | approved | R4-2014882 | - |
| R4-2016725 | TP for TR 37.717-11-21: DC\_3A\_n28A-n41A | KDDI Corporation | approved | R4-2014884 | - |
| R4-2016726 | TP for TR 37.717-11-21: DC\_18A\_n3A-n41A | KDDI Corporation | approved | R4-2014931 | - |
| R4-2016727 | TP for DC\_42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016728 | TP for DC\_42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016729 | TP for DC\_3-42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016730 | TP for DC\_3-42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016731 | TP for DC\_3-42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016732 | TP for DC\_19-42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016733 | TP for DC\_19-42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016734 | TP for DC\_19-42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016735 | TP for DC\_21-42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016736 | TP for DC\_21-42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016737 | TP for DC\_21-42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016738 | TP for DC\_3-19-42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016739 | TP for DC\_3-19-42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016740 | TP for DC\_3-19-42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016741 | TP for DC\_3-21-42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016742 | TP for DC\_3-21-42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016743 | TP for DC\_3-21-42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016744 | TP for DC\_19-21-42\_n1-n77 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016745 | TP for DC\_19-21-42\_n1-n78 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016746 | TP for DC\_19-21-42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016747 | TP for DC\_42\_n1-n79 for TR 37.717-11-21 | NTT DOCOMO, INC. | withdrawn | - | - |
| R4-2016748 | TP for TR 37.717-00-00 for CA\_n1A\_SUL\_n78A-n80A | Huawei, HiSilicon | approved | R4-2015541 | - |
| R4-2016749 | TP for TR 37.717-00-00 for CA\_n1A\_SUL\_n78A-n84A | Huawei, HiSilicon | approved | R4-2015542 | - |
| R4-2016750 | TP for TR 37.717-00-00 for CA\_n41A\_SUL\_n79A-n80A | Huawei, HiSilicon | approved | R4-2015543 | - |
| R4-2016751 | TP for TR 37.717-00-00 for CA\_n79A\_SUL\_n41A-n80A | Huawei, HiSilicon | approved | R4-2015544 | - |
| R4-2016752 | TP for TR 38.717-03-01 CA\_n3-n41-n77 | Samsung, KDDI | approved | R4-2014112 | - |
| R4-2016753 | TP for TR 38.717-03-01 CA\_n3-n41-n78 | Samsung, KDDI | approved | R4-2014113 | - |
| R4-2016754 | TP for TR 38.717-03-01: CA\_n1A-n8A-n78(2A) | Nokia, Telefonica | approved | R4-2014526 | - |
| R4-2016755 | TP for TR 38.717-03-02 CA\_n3-n28-n41 | Samsung, KDDI | approved | R4-2014116 | - |
| R4-2016756 | TP for TR 38.717-03-02 CA\_n3-n28-n78 | Samsung, KDDI | approved | R4-2014117 | - |
| R4-2016757 | TP for CA 3DL2UL n1-n77-n79 for TR 38.717-03-02 | NTT DOCOMO, INC., MediaTek Inc., LG Electronics | approved | R4-2014595 | - |
| R4-2016758 | TP for CA 3DL2UL n1-n78-n79 for TR 38.717-03-02 | NTT DOCOMO, INC., MediaTek Inc., LG Electronics | approved | R4-2014599 | - |
| R4-2016759 | TP to add CA\_n25A-n41A-n77A, CA\_n25A-n41(2A)-n77A, CA\_n25A-n41C-n77A | Ericsson, T-Mobile US | approved | R4-2016333 | - |
| R4-2016760 | TP to add CA\_n25A-n66A-n77A | Ericsson, T-Mobile US | approved | R4-2016334 | - |
| R4-2016761 | TP to add CA\_n25A-n71A-n77A | Ericsson, T-Mobile US | approved | R4-2016335 | - |
| R4-2016762 | TP to add CA\_n41A-n66A-n77A, CA\_n41(2A)-n66A-n77A, CA\_n41C-n66A-n77A | Ericsson, T-Mobile US | approved | R4-2016336 | - |
| R4-2016763 | TP to add CA\_n41A-n71A-n77A, CA\_n41(2A)-n71A-n77A, CA\_n41C-n71A-n77A | Ericsson, T-Mobile US | approved | R4-2016337 | - |
| R4-2016764 | TP to add CA\_n66A-n71A-n77A | Ericsson, T-Mobile US | approved | R4-2016338 | - |
| R4-2016765 | TP for TR 37.716-11-31: EN-DC\_1\_n3-n28-n77 | SoftBank Corp. | approved | R4-2014706 | - |
| R4-2016766 | TP for TR 37.717-11-31: EN-DC\_8\_n3-n28-n77 | SoftBank Corp. | approved | R4-2014707 | - |
| R4-2016767 | TP for TR 36.717-04-01: CA\_1-3-8-41 | VODAFONE Group Plc | approved | R4-2014065 | - |
| R4-2016768 | TP for TR 36.717-03-01: CA\_1-40-41 | VODAFONE Group Plc | approved | R4-2014068 | - |
| R4-2016769 | TP for TR 36.717-03-01: CA\_8-40-41 | VODAFONE Group Plc | approved | R4-2014069 | - |
| R4-2016770 | TP for TR 36.717-04-01: CA\_1A-7A-8A-38A | Huawei, HiSilicon | approved | R4-2015395 | - |
| R4-2016771 | TP for TR 36.717-04-01: CA\_1A-8A-20A-38A | Huawei, HiSilicon | approved | R4-2015396 | - |
| R4-2016772 | TP for TR 36.717-04-01: CA\_3A-8A-20A-38A | Huawei, HiSilicon | approved | R4-2015397 | - |
| R4-2016773 | TP for TR 36.717-04-01: CA\_1A-3C-8A-38A with UL CA\_3C | Huawei, HiSilicon | approved | R4-2015398 | - |
| R4-2016774 | TP for TR 36.717-04-01: CA\_1A-3C-8A-20A with UL CA\_3C | Huawei, HiSilicon | approved | R4-2015399 | - |
| R4-2016775 | Updated TP for TR 36.717-04-01: CA\_1A-3C-20A-38A with UL CA\_3C | Huawei, HiSilicon | approved | R4-2015400 | - |
| R4-2016776 | TP for TR 36.717-04-01: CA\_1A-3A-7A-8A-40A / CA\_1A-3A-7A-8A-40C | Huawei, HiSilicon | approved | R4-2015401 | - |
| R4-2016777 | Simulation results for 6425-7125MHz and 10-10.5GHz-downlink | CATT | noted | R4-2014458 | - |
| R4-2016778 | Simulation results for 6425-7125MHz and 10-10.5GHz-uplink | CATT | noted | R4-2014459 | - |
| R4-2016779 | LS to RAN5 on nominal channel spacing calculation for two carriers at band n41 with 40MHz and 80MHz channel bandwidths | RAN4 | approved | - | - |
| R4-2016780 | CR to 38.101-1: UL MIMO EVM and emission requirements update | Qualcomm Incorporated | agreed | R4-2014254 | - |
| R4-2016781 | CR to TS38.101-1 on DC location correction | Samsung | agreed | R4-2014718 | - |
| R4-2016782 | CR on correction for AMPR NS\_38,NS\_40 and NS\_41 | Huawei, HiSilicon | agreed | R4-2016534 | - |
| R4-2016783 | CR to DMRS position in UL RMC for FR1 | Qualcomm Incorporated | agreed | R4-2016578 | - |
| R4-2016784 | Reply LS on structure of NR CA reference sensitivity requirements in 38.101-1 | RAN4 | approved | - | - |
| R4-2016785 | EESS protection related requirements for FR2 bands | Nokia, Nokia Shanghai Bell | agreed | R4-2014054 | - |
| R4-2016786 | CR to TS38.101-2 on DC location correction | Samsung | agreed | R4-2014720 | - |
| R4-2016787 | CR to DMRS position in UL RMC for FR2 | Qualcomm Incorporated | agreed | R4-2016579 | - |
| R4-2016788 | Correction to EIS definition | Rohde & Schwarz | agreed | R4-2016031 | - |
| R4-2016789 | CR to TS 38.101-1[R15]: Clarification of non-simultaneous Rx/Tx operation for CA\_n77-n79 and CA\_n78-n79 in TS 38.101-1. | NTT DOCOMO, INC. | agreed | R4-2015016 | - |
| R4-2016790 | CR 38101-3 R15 Band 10 protection and DC\_42\_n79 correction | Skyworks Solutions Inc. | agreed | R4-2016238 | - |
| R4-2016791 | CR for TS 38.101-3: correction of spurious emission band UE co-existence (R15) | Huawei, HiSilicon | agreed | R4-2016496 | - |
| R4-2016792 | Correction of p-Max I.E and corresponding references | Ericsson | withdrawn | R4-2016055 | - |
| R4-2016793 | Correction of p-Max I.E and corresponding references | Ericsson | withdrawn | R4-2016054 | - |
| R4-2016794 | CR for 38.101-3 Correction on EN-DC synchronous carriers (R15) | Huawei, HiSilicon | agreed | R4-2016485 | - |
| R4-2016795 | CR for editorial corrections 36.101 | Ericsson | agreed | R4-2016340 | - |
| R4-2016796 | CR for 36.101 to clarify the SCS supports for LTE MBMS (Rel-14) | Huawei, HiSilicon, ZTE | agreed | R4-2015549 | - |
| R4-2016797 | Correction to the intra-cell guard band definition for wideband operation | Ericsson | revised | R4-2015972 | R4-2017825 |
| R4-2016798 | CR to TS 38.101-1 on NR CA bandwidth classes for unlicensed spectrum (Rel-16) | ZTE Corporation | not pursued | R4-2014955 | - |
| R4-2016799 | Removal of square brackets for 38.101-1 NR-U | Qualcomm Incorporated | revised | R4-2016436 | R4-2017837 |
| R4-2016800 | Correction to receiver requirements for shared spectrum channel access | Ericsson | agreed | R4-2015974 | - |
| R4-2016801 | CR to add NR-U EN-DC combinations | Ericsson, Charter Communication, T-Mobile US | agreed | R4-2015927 | - |
| R4-2016802 | CR to add NR-DC\_n48-n46 combinations | Charter Communications, Inc | not pursued | R4-2015803 | - |
| R4-2016803 | Correction on 5G V2X UE RF requirements in TS38.101-1 in rel-16 | LG Electronics France | agreed | R4-2014323 | - |
| R4-2016804 | Correction on update 5G V2X UE RF requirements in TR38.886 | LG Electronics France | agreed | R4-2014325 | - |
| R4-2016805 | CR on V2X bands reference table | OPPO | agreed | R4-2015333 | - |
| R4-2016806 | WF on SL switching period | Huawei, HiSilicon | approved | - | - |
| R4-2016807 | LS on SL switching priority | Xiaomi | revised | - | R4-2017839 |
| R4-2016808 | CR for TS 38.101-3, Time mask for TDM operation between NR V2X and LTE V2X in ITS band | CATT | agreed | R4-2014415 | - |
| R4-2016809 | CR for 38.886, Time mask for TDM between NR V2X and LTE V2X in ITS band | CATT | agreed | R4-2014416 | - |
| R4-2016810 | Correction on 5G V2X inter-band con-current UE RF requirements in TS38.101-3 | LG Electronics France | agreed | R4-2014324 | - |
| R4-2016811 | General corrections for V2X sections in 38.101-3 | Qualcomm Incorporated | agreed | R4-2014596 | - |
| R4-2016812 | Reply LS on cell-grouping UE capability for synchronous NR-DC | Apple | revised | R4-2014230 | R4-2017844 |
| R4-2016813 | CR for TS 38.101-1: correction of Pi/2 BPSK | Huawei, HiSilicon | withdrawn | R4-2016481 | - |
| R4-2016814 | A-MPR definition for CA\_n7B, CA\_n48B, CA\_n41B and CA\_n41C | Nokia | revised | R4-2014518 | R4-2017824 |
| R4-2016815 | CR for intra-band UL CA non-contiguous CA requirement | Huawei, HiSilicon, Nokia | agreed | R4-2016513 | - |
| R4-2016816 | WF on DC location reporting for intra-band UL CA | Huawei, HiSilicon | approved | - | - |
| R4-2016817 | LS on DC location reporting for intra-band UL CA | RAN4 | approved | - | - |
| R4-2016818 | CR to 38.101-1 Add requirement on the UL CA configurations with no DL interruption | China Telecom | agreed | R4-2015195 | - |
| R4-2016819 | CR to 38.101-3: Add requirement on the inter-band EN-DC with no DL interruption | China Telecom | agreed | R4-2015196 | - |
| R4-2016820 | WF on Beam Correspondence based on configured DL RS (SSB or CSI-RS) | Apple | approved | - | - |
| R4-2016821 | REL16 eBC capability alingment with 38.306 | Nokia, Nokia Shanghai Bell | agreed | R4-2014512 | - |
| R4-2016822 | CR to TR 38.831 on beam correspondence corrections | Apple Inc. | agreed | R4-2014924 | - |
| R4-2016823 | CR on beam correspondence side condition | Huawei, HiSilicon | not pursued | R4-2016518 | - |
| R4-2016824 | WF on addition of new frequency separation classes | Qualcomm | noted | - | - |
| R4-2016825 | CR to 38.101-2 (Rel-16) inter-band DL CA | Intel Corporation | agreed | R4-2014581 | - |
| R4-2016826 | Clarification of EIS spherical coverage for inter-band CA | Qualcomm Incorporated | agreed | R4-2014597 | - |
| R4-2016827 | CR to TR 38.831 to include DL CA agreement | Nokia, Nokia Shanghai Bell | agreed | R4-2015088 | - |
| R4-2016828 | CR for inter-band NC DL CA Rrefsens | Huawei, HiSilicon | not pursued | R4-2016519 | - |
| R4-2016829 | CR on TS 38.101-1 time mask for shorter transient | Huawei, HiSilicon | not pursued | R4-2016517 | - |
| R4-2016830 | WF on NR TxD | vivo | approved | - | - |
| R4-2016831 | WF on unsynchronized NW between n40 and n41 | Huawei | approved | - | - |
| R4-2016832 | TS 38.101-3: Addition of missing lower order fallbacks | Nokia, AT&T | not pursued | R4-2014520 | - |
| R4-2016833 | TR 37.716-21-11: Addition of missing lower order fallbacks | Nokia, AT&T | not pursued | R4-2014521 | - |
| R4-2016834 | CR on sum of power for multiple transmit connectors | OPPO | agreed | R4-2015339 | - |
| R4-2016835 | Replacement of void sub-clauses | Qualcomm Incorporated | withdrawn | R4-2016442 | - |
| R4-2016836 | CR for TS 38.101-1: harmonic MSD for CA\_n41-n79 | Huawei, HiSilicon | withdrawn | R4-2016483 | - |
| R4-2016837 | CR to TS 38.101-2 on fallback group for intra-band contiguous CA (Rel-16) | ZTE Corporation | agreed | R4-2014957 | - |
| R4-2016838 | CR for editorial corrections 38.101-2 | Ericsson | agreed | R4-2016342 | - |
| R4-2016839 | WF on handling of interference caused by larger CBWs | Qualcomm | approved | - | - |
| R4-2016840 | WF on DC\_20A\_n38A RF architecture | LGE | approved | - | - |
| R4-2016841 | WF on simultaneous Rx/Tx for DC\_42\_n79 | Huawei | approved | - | - |
| R4-2016842 | CR on NR power class under EN-DC | OPPO | agreed | R4-2015331 | - |
| R4-2016843 | CR for editorial corrections 38.101-3 | Ericsson | agreed | R4-2016343 | - |
| R4-2016844 | Adding delta TIB requirement for DC\_2-7-7-13\_n66 | Huawei, HiSilicon | agreed | R4-2016498 | - |
| R4-2016845 | Correction to PCMAX for contiguous intra-band EN-DC | Qualcomm Incorporated | agreed | R4-2016435 | - |
| R4-2016846 | CR on adding NR ovelapping bands list in TS38.307 in Rel-15 | LG Electronics France | agreed | R4-2014600 | - |
| R4-2016847 | CR on adding NR ovelapping bands list in TS38.307 in Rel-16 | LG Electronics France | agreed | R4-2014620 | - |
| R4-2016848 | CR to TS 38.307 on release independent update for the Rel.16 EN-DC and NR CA/DC | CHTTL, ZTE Corporation, Dish, SGS Wireless | agreed | R4-2015856 | - |
| R4-2016849 | LS on updated Rel-16 RAN4 UE features lists for NR and LTE | RAN4 | approved | - | - |
| R4-2016850 | Updated RAN4 UE features list for Rel-16 | CMCC | approved | - | - |
| R4-2016851 | WF on SAR solutions for PC2 NR inter-band CA and SUL configurations | China Telecom | approved | - | - |
| R4-2016852 | WF on power configuration for PC2 NR inter-band CA | Qualcomm | noted | - | - |
| R4-2016853 | Revised WID: High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink | China Telecom | withdrawn | R4-2015189 | - |
| R4-2016854 | WF on MSD assumptions improvement for UE PC2 combinations | China Telecom | noted | - | - |
| R4-2016855 | TP for TR38.xxx\_ PC2 CA\_n3A-n41A | ZTE Corporation, CMCC | approved | R4-2015053 | - |
| R4-2016856 | TP for TR 37.826 to introduce PC2 for DC\_1A\_n78A | China Unicom | approved | R4-2014679 | - |
| R4-2016857 | TP for TR 37.826 to introduce PC2 for DC\_8A\_n78A | China Unicom | approved | R4-2014680 | - |
| R4-2016858 | Revised RP-201294 - Basket WID on adding channel bandwidth support to existing NR bands | Ericsson | endorsed | R4-2015910 | - |
| R4-2016859 | Big CR to 38.104 - Additional Channel BW | Ericsson | agreed | R4-2015911 | - |
| R4-2016860 | Big CR to 38.101-1 - Additional Channel BW | Ericsson | agreed | R4-2015912 | - |
| R4-2016861 | draftCR to 38101-1 to add 90 and 100MHz BW for band n40 | Huawei, HiSilicon | not pursued | R4-2015297 | - |
| R4-2016862 | WF on release independence for 35 MHz and 45 MHz | T-Mobile USA | approved | - | - |
| R4-2016863 | WF on general aspects for UE RF requirements | Skyworks | approved | - | - |
| R4-2016864 | WF on UE REFSENS and A-MPR for 35MHz and 45MHz CBW | Qualcomm | approved | - | - |
| R4-2016865 | WF on BS RF requirements | ZTE | approved | - | - |
| R4-2016866 | CR for TS 38.104: draft CR on introduction of channel bandwidths 35MHz and 45MHz for BS TX and general part | Huawei, HiSilicon | withdrawn | R4-2015703 | - |
| R4-2016867 | Draft CR to TS 38.141-1: Introduction of CBWs 35 MHz and 45 MHz | Ericsson | withdrawn | R4-2015719 | - |
| R4-2016868 | Draft CR to TS 38.141-2: Introduction of 35MHz and 45MHz | ZTE Corporation | withdrawn | R4-2016117 | - |
| R4-2016869 | WF on band combinations for V2X con-current operation | CATT | approved | - | - |
| R4-2016870 | TP for TR 37.875: adding some UE RF study for NR V2X band combinations | Huawei, HiSilicon | revised | R4-2015561 | R4-2017829 |
| R4-2016871 | TP on V2X\_n40A-n47A coexistence study | CATT | approved | R4-2014422 | - |
| R4-2016872 | CR for TS 38.101-1, Introduce new band combination of V2X\_n39A-n47A and V2X\_n40A-n47A | CATT | agreed | R4-2014423 | - |
| R4-2016873 | CR for TS 38.101-3, Introduce new band combination of V2X\_39A-n47A, V2X\_n39A-47A, V2X\_40A-n47A and V2X\_n40A-47A | CATT | agreed | R4-2014424 | - |
| R4-2016874 | WF on FR2 FWA RF requirements | Softbank | approved | - | - |
| R4-2016875 | CR for FR2 FWA RF requirements | Huawei | not pursued | - | - |
| R4-2016876 | LS for FR2 FWA power class | RAN4 | approved | - | - |
| R4-2016877 | WF on A-MPR for NS\_07 | Apple | withdrawn | - | - |
| R4-2016878 | CR to TS 38.101-1: introduction of NR band n13 | Huawei, HiSilicon | agreed | R4-2015682 | - |
| R4-2016879 | WF on UE RF requirement of n262 | Qualcomm, Nokia, Sony | approved | - | - |
| R4-2016880 | WF on multi-band relaxation of n262 | Apple | approved | - | - |
| R4-2016881 | WF on BS MU/TT for n262 | Nokia | approved | - | - |
| R4-2016882 | Draft CR to TS 38.104 | Ericsson, Nokia, Nokia Shanghai Bell | endorsed | R4-2015903 | - |
| R4-2016883 | BS RF requirements and system parameters - TP to TR 38.847 | Ericsson | approved | R4-2015904 | - |
| R4-2016884 | TP to TR 38.847: BS RF requirements | Nokia, Nokia Shanghai Bell | approved | R4-2016191 | - |
| R4-2016885 | Draft CR for 37.105: Corrections related to Band 24 regulatory updates (Rel-15) | Ligado Networks | endorsed | R4-2014191 | - |
| R4-2016886 | Draft CR for 37.145-1: Corrections related to Band 24 regulatory updates (Rel-13) | Ligado Networks | endorsed | R4-2014194 | - |
| R4-2016887 | Draft CR for 37.145-2: Corrections related to Band 24 regulatory updates (Rel-15) | Ligado Networks | endorsed | R4-2014199 | - |
| R4-2016888 | Draft CR to 36.104: Correction to Band 24 requirements (Rel-10) | Nokia, Nokia Shanghai Bell | endorsed | R4-2016197 | - |
| R4-2016889 | Draft CR to 36.104: Correction to Band 24 requirements (Rel-10) | Nokia, Nokia Shanghai Bell | endorsed | R4-2016198 | - |
| R4-2016890 | Draft CR to 37.104: Correction to Band 24 requirements (Rel-10) | Nokia, Nokia Shanghai Bell | endorsed | R4-2016199 | - |
| R4-2016891 | Draft CR to 36.104: Correction to Band 24 requirements (Rel-10) | Nokia, Nokia Shanghai Bell | endorsed | R4-2016200 | - |
| R4-2016892 | Draft CR for 37.145-1 Introduction of NR band n24 | Ligado Networks | endorsed | R4-2014177 | - |
| R4-2016893 | Draft CR for 38.141-1 Introduction of NR band n24 | Ligado Networks | endorsed | R4-2014179 | - |
| R4-2016894 | Draft CR for 38.141-2 Introduction of NR band n24 | Ligado Networks | endorsed | R4-2014180 | - |
| R4-2016895 | Draft CR to 38.104: Introduction of n24 | Nokia, Nokia Shanghai Bell | endorsed | R4-2016196 | - |
| R4-2016896 | WF on work items LTE\_B24\_mod and NR\_band\_n24 | Ligado Networks | approved | - | - |
| R4-2016897 | WF on work item NR\_SUL\_UL\_n24) | Ligado Networks | approved | - | - |
| R4-2016898 | Draft CR for TS 37.105 Introduction of SUL for UL of NR band n24 | Ligado Networks | endorsed | R4-2014206 | - |
| R4-2016899 | Draft CR for TS 37.141 Introduction of SUL for UL of NR band n24 | Ligado Networks | endorsed | R4-2014207 | - |
| R4-2016900 | Draft CR for TS 37.145-1 Introduction of SUL for UL of NR band n24 | Ligado Networks | endorsed | R4-2014208 | - |
| R4-2016901 | TP to TR 38.921: Clarification of system level simulation assumptions for study on IMT parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz | Nokia, Nokia Shanghai Bell, ZTE | approved | R4-2014475 | - |
| R4-2016902 | TP to TR 38.921: Correction to antenna parameter table in clause 3 and sub-clause 8.1 | Ericsson | approved | R4-2014979 | - |
| R4-2016903 | Maintenance TP to TR38.921 | ZTE Corporation | approved | R4-2016132 | - |
| R4-2016904 | WF on Coexistence Simulations results for 6.425-7.125 GHz and 10.0-10.5 GHz | Huawei, HiSilicon, CATT, Nokia, Ericsson, ZTE | approved | - | - |
| R4-2016905 | WF on BS and UE parameters for 6.425-7.125 and 10.0-10.5 GHz | Nokia | approved | - | - |
| R4-2016906 | TP to TR38.921 : BS spurious emission | ZTE Corporation | approved | R4-2016133 | - |
| R4-2016907 | TP on spatial emission and interference mitigation | Huawei, HiSilicon | approved | R4-2015680 | - |
| R4-2016908 | work plan for Rel-17 FR1 UE RF enhancement | Huawei, HiSilicon | approved | R4-2016540 | - |
| R4-2016909 | LS on removing restriction on configuring UL MIMO for SUL band | RAN4 | approved | R4-2014736 | - |
| R4-2016910 | WF on MPR simulation assumption for PC2 intra-band contiguous UL CA | Skyworks | approved | - | - |
| R4-2016911 | WF on RF requirements for PC2 intra-band contiguous UL CA | Huawei | revised | - | R4-2017827 |
| R4-2016912 | WF on 4Rx requirement for CA\_n77(3A) and CA\_77(4A) | Softbank | approved | - | - |
| R4-2016913 | TP to TR 38.717-01-01 to include CA\_n77(3A) | Ericsson, Verizon | noted | R4-2016331 | - |
| R4-2016914 | WF on RF requirements for Rel-17 Tx switching enhancement | China Telecom | revised | - | R4-2017815 |
| R4-2016915 | WF on Applicability of CBM/IBM for different CA | Samsung | approved | - | - |
| R4-2016916 | WF on UE requirements for CA configurations CA\_n258A-n260A and CA\_n257A-n259A based on IBM | Intel | approved | - | - |
| R4-2016917 | WF on UE requirements for CA configurations within the same frequency group based on CBM | Nokia | approved | - | - |
| R4-2016918 | WF on inter-band CA and UE BM type | Qualcomm | revised | - | R4-2017813 |
| R4-2016919 | WF on UL gap in FR2 | Apple | approved | - | - |
| R4-2016920 | Work plan for NR support for high speed train scenario in FR2 | Samsung, Nokia, Nokia Shanghai Bell | approved | R4-2014846 | - |
| R4-2016921 | WF on NR support for HST in FR2 | Samsung | revised | - | R4-2017828 |
| R4-2016922 | TR skeleton for NR support for high speed train scenario in FR2 | Nokia, Nokia Shanghai Bell | revised | R4-2015880 | R4-2017838 |
| R4-2016923 | WF on the proposed operating bands for NR SL operation in FR1 | AT&T | approved | - | - |
| R4-2016924 | Work plan for SL enhancement for RF perspectives in Rel-17 | LG Electronics France | approved | R4-2014326 | - |
| R4-2016925 | WF on Min and Max Channel Bandwidths in 52 to 71 GHz | Huawei | revised | - | R4-2017832 |
| R4-2016926 | WF on Phase noise mask and PTRS | Qualcomm | approved | - | - |
| R4-2016927 | WF on timing text proposal to TR | Nokia | approved | - | - |
| R4-2016928 | LS on PN models | RAN4 | approved | - | - |
| R4-2016929 | Work Plan for Study on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidth | Ericsson | approved | R4-2015721 | - |
| R4-2016930 | TR Skeleton on CH BW not aligned with existing BWs | Ericsson | approved | R4-2015722 | - |
| R4-2016931 | WF on Irregular Channel Bandwidths | Ericsson | revised | - | R4-2017833 |
| R4-2016932 | WF on A-MPR simulation assumption for B24 CAT-M1/M2 device | Ligado Networks | approved | - | - |
| R4-2016933 | Updated Work Plan for Study on High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71 | Nokia | approved | - | - |
| R4-2016934 | TP to TR 37.880: Coexistence Simulation Results and Observations for High-power UE operation Vs NB-IoT standalone operation | Nokia, Nokia Shanghai Bell | approved | - | - |
| R4-2016935 | WF on rules on request sheet and notations of CA/DC configurations | Apple | approved | - | - |
| R4-2016936 | WF on updating cover sheet of request sheet | NTT DOCOMO.,INC. | approved | - | - |
| R4-2016937 | CR to TS 38.101-1 on simplification for inter-band CA configuration | ZTE Corporation | agreed | R4-2014960 | - |
| R4-2016938 | CR to TS 38.101-2 on simplification for inter-band CA configuration | ZTE Corporation | agreed | R4-2014961 | - |
| R4-2016939 | CR to TS 38.101-3 on simplification for inter-band CA configuration between FR1 and FR2 | ZTE Corporation | agreed | R4-2014962 | - |
| R4-2016940 | WF on MSD test point specification methodology for LTE CA | Skyworks | approved | - | - |
| R4-2016941 | WF on alternative to creating new BCSs | T-Mobile USA | revised | - | R4-2017836 |
| R4-2016942 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | agreed | R4-2014327 | - |
| R4-2016943 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | agreed | R4-2014328 | - |
| R4-2016944 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | agreed | R4-2014329 | - |
| R4-2016945 | Email discussion summary for [97e][101] NR\_NewRAT\_SysParameters | Moderator (ZTE) | noted | R4-2016603 | - |
| R4-2016946 | Email discussion summary for [97e][102] NR\_NewRAT\_UE\_RF\_Part\_1 | Moderator (Nokia) | noted | R4-2016604 | - |
| R4-2016947 | Email discussion summary for [97e][103] NR\_NewRAT\_UE\_RF\_Part\_2 | Moderator (Apple) | noted | R4-2016605 | - |
| R4-2016948 | Email discussion summary for [97e][104] NR\_NewRAT\_UE\_RF\_Part\_3 | Moderator (Huawei) | noted | R4-2016606 | - |
| R4-2016949 | Email discussion summary for [97e][105] LTE\_Maintenance | Moderator (Skyworks) | noted | R4-2016607 | - |
| R4-2016950 | Email discussion summary for [97e][106] NR\_unlic\_SysParameters | Moderator (Ericsson) | noted | R4-2016608 | - |
| R4-2016951 | Email discussion summary for [97e][107] NR\_unlic\_UE\_RF | Moderator (Qualcomm) | noted | R4-2016609 | - |
| R4-2016952 | Email discussion summary for [97e][108] 5G\_V2X\_NRSL\_UE\_RF | Moderator (LG Electronics) | noted | R4-2016610 | - |
| R4-2016953 | Email discussion summary for [97e][109] 5G\_V2X\_NRSL\_UE\_Concurrent | Moderator (Huawei) | noted | R4-2016611 | - |
| R4-2016954 | Email discussion summary for [97e][110] LTE\_NR\_DC\_CA\_enh\_RF | Moderator (Ericsson) | noted | R4-2016612 | - |
| R4-2016955 | Email discussion summary for [97e][111] NR\_eMIMO\_UE\_RF | Moderator (Samsung) | noted | R4-2016613 | - |
| R4-2016956 | Email discussion summary for [97e][112] NR\_RF\_FR1\_Part\_1 | Moderator (Huawei) | noted | R4-2016614 | - |
| R4-2016957 | Email discussion summary for [97e][113] NR\_RF\_FR2\_req\_enh\_Part\_4 | Moderator (Nokia) | noted | R4-2016615 | - |
| R4-2016958 | Email discussion summary for [97e][114] NR\_transient\_period | Moderator (CMCC) | noted | R4-2016616 | - |
| R4-2016959 | Email discussion summary for [97e][115] NR\_TxD | Moderator (vivo) | noted | R4-2016617 | - |
| R4-2016960 | Email discussion summary for [97e][116] NR\_R16\_Maintenance | Moderator (OPPO) | noted | R4-2016618 | - |
| R4-2016961 | Email discussion summary for [97e][117] R16\_UE\_ feature | Moderator (CMCC) | noted | R4-2016619 | - |
| R4-2016962 | Email discussion summary for [97e][118] NR\_n48\_LTE\_48\_coex | Moderator (Apple) | noted | R4-2016620 | - |
| R4-2016963 | Email discussion summary for [97e][121] NR\_SAR\_PC2\_interB\_SUL\_2BUL | Moderator (China Telecom) | noted | R4-2016623 | - |
| R4-2016964 | Email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL | Moderator (China Telecom) | noted | R4-2016624 | - |
| R4-2016965 | Email discussion summary for [97e][123] ENDC\_UE\_PC2\_R17\_NR\_TDD | Moderator (China Unicom) | noted | R4-2016625 | - |
| R4-2016966 | Email discussion summary for [97e][124] NR\_bands\_R17\_BWs | Moderator (Ericsson) | noted | R4-2016626 | - |
| R4-2016967 | Email discussion summary for [97e][125] NR\_FR1\_35MHz\_45MHz\_BW | Moderator (Huawei) | noted | R4-2016627 | - |
| R4-2016968 | Email discussion summary for [97e][126] NR\_LTE\_V2X\_PC5\_combos | Moderator (CATT) | noted | R4-2016628 | - |
| R4-2016969 | Email discussion summary for [97e][127] NR\_FR2\_FWA\_Bn257\_Bn258 | Moderator (Softbank) | noted | R4-2016629 | - |
| R4-2016970 | Email discussion summary for [97e][128] NR\_n13 | Moderator (Huawei) | noted | R4-2016630 | - |
| R4-2016971 | Email discussion summary for [97e][130] NR\_47GHz\_Band | Moderator (Nokia) | noted | R4-2016632 | - |
| R4-2016972 | Email discussion summary for [97e][131] NR\_LTE\_band\_n24 | Moderator (Ligado Networks) | noted | R4-2016633 | - |
| R4-2016973 | Email discussion summary for [97e][132] FS\_6425\_10500MHz \_NR | Moderator (Ericsson) | noted | R4-2016634 | - |
| R4-2016974 | Email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 | Moderator (Huawei) | revised | R4-2016635 | R4-2017842 |
| R4-2016975 | Email discussion summary for [97e][134] NR\_RF\_FR1\_enh\_Part\_2 | Moderator (China Telecom) | noted | R4-2016636 | - |
| R4-2016976 | Email discussion summary for [97e][135] NR\_RF\_FR2\_req\_enh2\_Part\_1 | Moderator (Nokia) | noted | R4-2016637 | - |
| R4-2016977 | Email discussion summary for [97e][136] NR\_RF\_FR2\_req\_enh2\_Part\_2 | Moderator (Qualcomm) | noted | R4-2016638 | - |
| R4-2016978 | Email discussion summary for [97e][137] NR\_RF\_FR2\_req\_enh2\_Part\_3 | Moderator (Apple) | noted | R4-2016639 | - |
| R4-2016979 | Email discussion summary for [97e][138] NR\_HST\_FR2\_enh | Moderator (Samsung) | noted | R4-2016640 | - |
| R4-2016980 | Email discussion summary for [97e][139] NRSL\_enh | Moderator (LG Electronics) | noted | R4-2016641 | - |
| R4-2016981 | Email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 | Moderator (Qualcomm) | revised | R4-2016642 | R4-2017812 |
| R4-2016982 | Email discussion summary for [97e][141] FS\_NR\_52\_to\_71GHz\_Part\_2 | Moderator (Intel) | noted | R4-2016643 | - |
| R4-2016983 | Email discussion summary for [97e][142] FS\_NR\_eff\_BW\_util | Moderator (Ericsson) | noted | R4-2016644 | - |
| R4-2016984 | Email discussion summary for [97e][144] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 | Moderator (Ercisson) | noted | R4-2016646 | - |
| R4-2016985 | Email discussion summary for [97e][145] FS\_LTE\_NR\_HPUE\_FWVM | Moderator (Nokia) | noted | R4-2016647 | - |
| R4-2016986 | Email discussion summary for [97e][146] BC\_simplification | Moderator (NTT DOCOMO) | noted | R4-2016648 | - |
| R4-2016987 | CR to TS 38.307 on Release independence of FDD-TDD EN-DC High Power UE | CHTTL, China Unicom | agreed | - | - |
| R4-2016988 | LS to RAN2 on UE simultaneous Rx/Tx capability | RAN4 | approved | - | - |
| R4-2016989 | CR for editorial corrections 38.101-1 | Ericsson | agreed | R4-2016341 | - |
| R4-2016990 | Correction of applicability of 2Rx requirements | vivo | agreed | R4-2016225 | - |
| R4-2016991 | CR to TS 38.101-3: Some corrections on the ENDC | ZTE Corporation | agreed | R4-2015034 | - |
| R4-2016992 | Introduction of Rel-17 LTE inter-band CA for 2 bands DL with 1 band UL combinations in TS36.101 | Qualcomm Incorporated | agreed | - | - |
| R4-2016993 | CR to DMRS position in UL RMC for FR1 | Qualcomm Incorporated | agreed | - | - |
| R4-2016994 | WF on NR SCC UL power drop behavior in FR2 | Ericsson | approved | - | - |
| R4-2016995 | TP to TR 38.808 BS RF for NR beyond 52.6 GHz | Nokia, Nokia Shanghai Bell | approved | R4-2015200 | - |
| R4-2016996 | CR Correction to B72 coex - CA\_NS\_08 - Band 10 protection 36.101 Rel15 | Skyworks Solutions Inc. | agreed | R4-2016035 | - |
| R4-2016997 | CR Correction to B72 coex - CA\_NS\_08 - Band 10 protection 36.101 Rel16 | Skyworks Solutions Inc. | agreed | R4-2016040 | - |
| R4-2016998 | WF on FS 52 to 71 GHz | Intel | approved | - | - |
| R4-2016999 | CR to TS 38.133 on measurement period requirements for PRS RSTD, PRS-RSRP and UE Rx-Tx(section 9.9) | OPPO | revised | R4-2014798 | R4-2017147 |
| R4-2017000 | Email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core | Moderator (Huawei) | revised | - | R4-2017271 |
| R4-2017001 | Email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf | Moderator (Ericsson) | revised | - | R4-2017272 |
| R4-2017002 | Email discussion summary for [97e][203] LTE\_RRM\_maintenance | Moderator (Ericsson) | revised | - | R4-2017273 |
| R4-2017003 | Email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance | Moderator (Apple) | revised | - | R4-2017274 |
| R4-2017004 | Email discussion summary for [97e][205] NR\_unlic\_RRM\_1 | Moderator (Ericsson) | revised | - | R4-2017275 |
| R4-2017005 | Email discussion summary for [97e][206] NR\_unlic\_RRM\_2 | Moderator (Nokia) | revised | - | R4-2017276 |
| R4-2017006 | Email discussion summary for [97e][207] NR\_Mob\_enh\_RRM | Moderator (Apple) | revised | - | R4-2017277 |
| R4-2017007 | Email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM | Moderator (LG Electronics) | revised | - | R4-2017278 |
| R4-2017008 | Email discussion summary for [97e][209] NR\_IAB\_RRM | Moderator (ZTE Corporation) | revised | - | R4-2017279 |
| R4-2017009 | Email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 | Moderator (Nokia) | revised | - | R4-2017280 |
| R4-2017010 | Email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 | Moderator (Ericsson) | revised | - | R4-2017281 |
| R4-2017011 | Email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM | Moderator (CATT) | revised | - | R4-2017282 |
| R4-2017012 | Email discussion summary for [97e][213] NR\_pos\_RRM\_1 | Moderator (Huawei) | revised | - | R4-2017283 |
| R4-2017013 | Email discussion summary for [97e][214] NR\_pos\_RRM\_2 | Moderator (Intel Corporation) | revised | - | R4-2017284 |
| R4-2017014 | Email discussion summary for [97e][215] NR\_pos\_RRM\_3 | Moderator (Ericsson) | revised | - | R4-2017285 |
| R4-2017015 | Email discussion summary for [97e][216] NR\_eMIMO\_RRM | Moderator (Samsung) | revised | - | R4-2017286 |
| R4-2017016 | Email discussion summary for [97e][217] NR\_RF\_FR1\_RRM | Moderator (Huawei) | revised | - | R4-2017287 |
| R4-2017017 | Email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 | Moderator (Intel Corporation) | revised | - | R4-2017288 |
| R4-2017018 | Email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 | Moderator (ZTE Corporation) | revised | - | R4-2017289 |
| R4-2017019 | Email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 | Moderator (Apple) | revised | - | R4-2017290 |
| R4-2017020 | Email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 | Moderator (CATT) | revised | - | R4-2017291 |
| R4-2017021 | Email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 | Moderator (OPPO) | revised | - | R4-2017033 |
| R4-2017022 | Email discussion summary for [97e][223] NR\_HST\_RRM | Moderator (CMCC) | revised | - | R4-2017293 |
| R4-2017023 | Email discussion summary for [97e][224] NR\_2step\_RACH\_RRM | Moderator (ZTE Corporation) | revised | - | R4-2017294 |
| R4-2017024 | Email discussion summary for [97e][225] LTE\_eMTC5\_RRM | Moderator (Ericsson) | revised | - | R4-2017295 |
| R4-2017025 | Email discussion summary for [97e][226] NB\_IOTenh3\_RRM | Moderator (Huawei) | revised | - | R4-2017296 |
| R4-2017026 | Email discussion summary for [97e][227] LTE\_feMob\_RRM | Moderator (Nokia) | revised | - | R4-2017297 |
| R4-2017027 | Email discussion summary for [97e][228] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM | Moderator (Huawei) | revised | - | R4-2017298 |
| R4-2017028 | Email discussion summary for [97e][229] NR\_RRM\_enh2 | Moderator (Apple) | revised | - | R4-2017299 |
| R4-2017029 | Email discussion summary for [97e][230] NR\_MG\_enh | Moderator (MediaTek) | revised | - | R4-2017300 |
| R4-2017030 | Email discussion summary for [97e][231] NR\_HST\_FR1\_enh | Moderator (CMCC) | revised | - | R4-2017301 |
| R4-2017031 | Email discussion summary for [97e][232] NR\_NTN\_solutions\_RRM | Moderator (THALES) | revised | - | R4-2017302 |
| R4-2017032 | Email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM | Moderator (MediaTek) | revised | - | R4-2017303 |
| R4-2017033 | Email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 | Moderator (OPPO) | revised | R4-2017021 | R4-2017292 |
| R4-2017034 | Correction to CSSF calculation R15 | Huawei, HiSilicon | withdrawn | - | - |
| R4-2017035 | WF on SSB-less SCell activation delay requirement | Qualcomm | noted | - | - |
| R4-2017036 | CR on SCell activation requirements R15 | Huawei, HiSilicon | agreed | R4-2015736 | - |
| R4-2017037 | CR on CSI-RS BW condition for BFD/CBD R15 | Apple | agreed | R4-2014268 | - |
| R4-2017038 | CR on AP-CSI-RS based L1-RSRP measurement R15 | Apple, Huawei, HiSilicon | agreed | R4-2014271 | - |
| R4-2017039 | WF on RRC based BWP switching for SCell | Apple | approved | - | - |
| R4-2017040 | LS on RRC based BWP switching for SCell | RAN4 | approved | - | - |
| R4-2017041 | CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | revised | R4-2016373 | R4-2017377 |
| R4-2017042 | Aggregation level of CORESET for RMC scheduling | ANRITSU LTD | agreed | R4-2014026 | - |
| R4-2017043 | Correction to CSI-RS RMC configuration R15 | Huawei, HiSilicon | agreed | R4-2015447 | - |
| R4-2017044 | RB allocation and Noc level in RLM Test cases | ANRITSU LTD | agreed | R4-2014017 | - |
| R4-2017045 | Correct UE beam assumption for Test Cases in A.5.6 | ANRITSU LTD | agreed | R4-2014023 | - |
| R4-2017046 | CR on TS38.133 for cell reselection test case | MediaTek inc. | revised | R4-2014374 | R4-2017334 |
| R4-2017047 | Correction of active BWP switch test case | MediaTek inc. | agreed | R4-2014376 | - |
| R4-2017048 | CR on correcting SSB and RACH configuration in CSI-RS based beam failure detection and link recovery tests | Qualcomm CDMA Technologies | endorsed | R4-2014591 | - |
| R4-2017049 | Correction on beamFailureInstanceMaxCount for test case of availability restriction during FR2 BFR in R15 | MediaTek inc. | agreed | R4-2014865 | - |
| R4-2017050 | Correction of TBD values in EN-DC PSCell addition and release delay test | Ericsson | withdrawn | - | - |
| R4-2017051 | Corrections to frequency range in interfrequency measurement procedures tests | Ericsson | agreed | R4-2015154 | - |
| R4-2017052 | Square bracket removal in 38.133 section A.1 to A.5 | Ericsson | agreed | R4-2015163 | - |
| R4-2017053 | Correction to cell reselection test cases R15 | Huawei, HiSilicon | agreed | R4-2015449 | - |
| R4-2017054 | Correction to inter-RAT handover test cases R15 | Huawei, HiSilicon | agreed | R4-2015451 | - |
| R4-2017055 | Correction to NR measurement under LTE SA test cases R15 | Huawei, HiSilicon | agreed | R4-2015453 | - |
| R4-2017056 | Correction to inter-RAT SFTD measurement test cases R15 | Huawei, HiSilicon | agreed | R4-2015455 | - |
| R4-2017057 | CR on RRC-based active TCI state switch test case Rel-15 | Huawei, HiSilicon | agreed | R4-2015531 | - |
| R4-2017058 | [CR] NR Perf Maintenance R15 Cat F | ZTE Corporation | agreed | R4-2015674 | - |
| R4-2017059 | CR to TS 38.133: Corrections to inter-RAT FR1 test cases (Rel-15) | Rohde & Schwarz | agreed | R4-2015993 | - |
| R4-2017060 | CR to TS 38.133: Corrections to inter-RAT FR2 test cases (Rel-15) | Rohde & Schwarz | agreed | R4-2015995 | - |
| R4-2017061 | Removal of annex B.2.6 on one shot timing adjustment in 38.133 | Ericsson | agreed | R4-2016160 | - |
| R4-2017062 | CR on performance requirements tests for euCA. | Nokia, Nokia Shanghai Bell | agreed | R4-2015879 | - |
| R4-2017063 | CR on maintaining V2X test cases in TS36.133 R14 | Huawei, HiSilicon | agreed | R4-2015461 | - |
| R4-2017064 | CR: Correction of eMTC early-OOS/early-IS tests (Rel-14) | Ericsson | postponed | R4-2015838 | - |
| R4-2017065 | CR: Correction of eMTC early-OOS/early-IS tests | Ericsson | postponed | R4-2015839 | - |
| R4-2017066 | Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA | Qualcomm Incorporated | agreed | R4-2016548 | - |
| R4-2017067 | CR on interruptions at E-UTRA SRS carrier based switching in TS38.133 | OPPO | postponed | R4-2014796 | - |
| R4-2017068 | CR on RSS measurement requirements | Huawei, HiSilicon | agreed | R4-2015779 | - |
| R4-2017069 | CR to introduce measurement requirements for eMTC in RRC\_Inactive | Huawei, HiSilicon | agreed | R4-2015780 | - |
| R4-2017070 | Correction to RSS based measurement requirements | Nokia, Nokia Shanghai Bell, Ericsson | agreed | R4-2016587 | - |
| R4-2017071 | Big CR: Introduction of Rel-16 eMTC RRM performance requirements (TS 36.133) | Ericsson | agreed | - | - |
| R4-2017072 | Draft CR: Test cases of RLM for MPDCCH performance improvement | Ericsson | endorsed | R4-2015842 | - |
| R4-2017073 | Big CR: Introduction of Rel-16 Nb-IoT RRM RRM performance requirements (TS 36.133) | Huawei, HiSilicon | agreed | - | - |
| R4-2017074 | CR on RRM requirements for short DRX with eDRX configured for Rel-16 NB-IoT | Huawei, HiSilicon, Mediatek Inc. | agreed | R4-2015513 | - |
| R4-2017075 | Draft CR on test cases for UE specific DRX cycles for Rel-16 NB-IoT | Huawei, HiSilicon | endorsed | R4-2015514 | - |
| R4-2017076 | Draft CR: MSG3 based channel quality reporting on non-anchor carrier | Ericsson | endorsed | R4-2015817 | - |
| R4-2017077 | Test cases for DLchannel quality report accuracy in RRC\_CONNECTED for UE Cat-NB1 Standalone mode | Qualcomm Incorporated | endorsed | R4-2016553 | - |
| R4-2017078 | WF on further test cases for LTE feMob | Nokia, Nokia Shanghai Bell | revised | - | R4-2017374 |
| R4-2017079 | Correction on LTE conditional handover | Nokia, Nokia Shanghai Bell | agreed | R4-2016385 | - |
| R4-2017080 | WF on NR-U RRM core requirements | Ericsson | approved | - | - |
| R4-2017081 | Terminology updates for NR-U | Ericsson | agreed | R4-2016409 | - |
| R4-2017082 | Terminology updates for NR-U | Ericsson | agreed | R4-2016410 | - |
| R4-2017083 | LS on measuring CSI-RS during SCell activation. | Ericsson | revised | - | R4-2017381 |
| R4-2017084 | Interruption windows and applicability of Scell activation/deactivation requirements for SCells operating with CCA | Qualcomm Incorporated | agreed | R4-2016591 | - |
| R4-2017085 | CR on TCI state switching requirements for NR-U | Huawei, HiSilicon | agreed | R4-2015518 | - |
| R4-2017086 | Updates in RLM requirements for NR-U | Ericsson | postponed | R4-2016413 | - |
| R4-2017087 | CR: Beam management requirements with CCA | Ericsson | postponed | R4-2015819 | - |
| R4-2017088 | Correction to timing requirements in NR-U | Ericsson | agreed | R4-2016177 | - |
| R4-2017089 | WF on NR-U RRM Performance requirements | Nokia, Nokia Shanghai Bell | approved | - | - |
| R4-2017090 | LS on clarification of RSSI measurement bandwidth | Huawei | noted | - | - |
| R4-2017091 | Measurement accuracy requirements for NR-U | Ericsson | endorsed | R4-2016418 | - |
| R4-2017092 | NR-U test cases structure | Ericsson | endorsed | R4-2016417 | - |
| R4-2017093 | WF on NR mobility enhancement | Apple | approved | - | - |
| R4-2017094 | CR on TS38.133 for dual active protocol stack handover | MediaTek inc. | agreed | R4-2014358 | - |
| R4-2017095 | Corrections to DAPS requirements | Ericsson | withdrawn | - | - |
| R4-2017096 | Intra-band Inter-frequency sync DAPS handover test in SA for FR1 | Intel Corporation | revised | R4-2014580 | R4-2017351 |
| R4-2017097 | Conditional handover test cases for NR | Ericsson | agreed | R4-2015169 | - |
| R4-2017098 | CR on inter-band DAPS handover tests | Huawei, HiSilicon | agreed | R4-2015466 | - |
| R4-2017099 | Introduction of intra-frequency sync and async DAPS HO test cases in FR1 | Qualcomm Incorporated | agreed | R4-2016555 | - |
| R4-2017100 | WF on NR V2X RRM requirements | LG Electronics | approved | - | - |
| R4-2017101 | CR of NR V2X operating band group | LG Electronics Inc. | agreed | R4-2014295 | - |
| R4-2017102 | CR of NR V2X measurement accuracy requirements(SL-RSSI and L1 SL-RSRP) | LG Electronics Inc. | endorsed | R4-2014296 | - |
| R4-2017103 | CR of Annex.B for NR V2X side conditions | LG Electronics Inc. | endorsed | R4-2014298 | - |
| R4-2017104 | DraftCR on PSBCH-RSRP accuracy requirements | Huawei, HiSilicon | endorsed | R4-2015467 | - |
| R4-2017105 | Draft Big CR: Introduction of Rel-16 NR V2X RRM performance requirements (TS 38.133) | LG Electronics | endorsed | - | - |
| R4-2017106 | DraftCR on UE Transmission Timing Accuracy Tests for NR V2X | Huawei, HiSilicon | endorsed | R4-2015469 | - |
| R4-2017107 | draft CR of Test for initiation and cease of SLSS Transmission with V2X Sidelink Communication | LG Electronics Inc. | endorsed | R4-2014299 | - |
| R4-2017108 | RRM test cases for NR V2X Synchronization Reference Selection/Reselection | Xiaomi | endorsed | R4-2014655 | - |
| R4-2017109 | CR: RRM autonomous resource selection test cases for NR V2X | Qualcomm, Inc. | endorsed | R4-2014639 | - |
| R4-2017110 | CR on V2X UE Resource Selection Tests for Re-evaluation | MediaTek inc. | endorsed | R4-2014769 | - |
| R4-2017111 | CR on V2X UE Congestion Control Measurement Test | MediaTek inc. | revised | R4-2014770 | R4-2017347 |
| R4-2017112 | DraftCR on Interruption Tests for NR V2X | Huawei, HiSilicon | endorsed | R4-2015470 | - |
| R4-2017113 | Symbols, abbreviations and definitions for IAB RRM in 38.174 | Ericsson | endorsed | R4-2016170 | - |
| R4-2017114 | Correction on IAB RRM requirements in TS 38.174 | Nokia, Nokia Shanghai Bell | endorsed | R4-2016382 | - |
| R4-2017115 | WF on test cases for IAB-MTs | ZTE Corporation | revised | - | R4-2017383 |
| R4-2017116 | [draft CR] Test cases for timing for IAB-MT | ZTE Corporation | postponed | R4-2014184 | - |
| R4-2017117 | Specification structure for IAB-MT RRM test cases in 38.174 | Ericsson | endorsed | R4-2016172 | - |
| R4-2017118 | WF on MR-DC RRM requirements for Idle mode CA measurements | Nokia, Nokia Shanghai Bell | revised | - | R4-2017357 |
| R4-2017119 | LS on RAN4 agreements for MR-DC Idle mode CA measurements | ZTE | revised | - | R4-2017356 |
| R4-2017120 | CR on UE requirement for MR-DC early measurement reporting in 38.133 | Nokia, Nokia Shanghai Bell | revised | R4-2015883 | R4-2017355 |
| R4-2017121 | CR on EMR requirements in 36.133 | Huawei, HiSilicon, MediaTek | revised | R4-2015743 | R4-2017354 |
| R4-2017122 | WF on Test cases for MR-DC Idle mode CA measurements | Nokia, Nokia Shanghai Bell | revised | - | R4-2017358 |
| R4-2017123 | WF on RRM Core requirements maintenance in MR-DC RRM 2 | Ericsson | approved | - | - |
| R4-2017124 | LS on TCI state indication at Direct SCell activation | MediaTek | revised | - | R4-2017329 |
| R4-2017125 | CR on BWP switching and SCell dormancy | Huawei, HiSilicon | agreed | R4-2015745 | - |
| R4-2017126 | CR to Staring point of an Interruption window at Direct SCell activation | Qualcomm Incorporated | withdrawn | - | - |
| R4-2017127 | CR 36.133 Removal of brackets for NR SCell Dormancy | Ericsson | agreed | R4-2016021 | - |
| R4-2017128 | CR on TS38.133 interruption time for CA with non-aligned frame boundaries | MediaTek inc. | revised | R4-2014360 | R4-2017330 |
| R4-2017129 | CR on BWP switching delay on mulitple CCs | Huawei, HiSilicon | agreed | R4-2015504 | - |
| R4-2017130 | WF on Test Cases for Direct SCell Activation and SCell Dormancy | Ericsson | approved | - | - |
| R4-2017131 | Correction CR to Rel-16 UE power saving requirements | Huawei, HiSilicon | agreed | R4-2015482 | - |
| R4-2017132 | Corrections to UE power saving requirements | Ericsson | agreed | R4-2016146 | - |
| R4-2017133 | WF on RRM test cases for power saving | CATT | approved | - | - |
| R4-2017134 | Big CR: Introduction of Rel-16 NR UE Power Saving RRM Performance requirements (TS 38.133) | CATT | agreed | - | - |
| R4-2017135 | Work plan for power saving RRM test cases | CATT | approved | R4-2014455 | - |
| R4-2017136 | CR on TS38.133 for cell reselection to FR1 inter-RAT E-UTRA test case with low mobility criterion | MediaTek inc. | endorsed | R4-2014371 | - |
| R4-2017137 | CR for TS38.133, test case for cell reselection to FR1 intra-frequency NR case for power saving | CATT | endorsed | R4-2014410 | - |
| R4-2017138 | RRM test cases for NR UE power saving | Xiaomi | endorsed | R4-2014656 | - |
| R4-2017139 | CR for test case for cell reselection to FR1 inter-RAT E-UTRA for not at cell edge criterion | vivo | endorsed | R4-2014836 | - |
| R4-2017140 | Test case for cell reselection to FR2 intra-frequency NR case for UE configured with relaxed measurement | Huawei, HiSilicon | endorsed | R4-2015484 | - |
| R4-2017141 | Draft CR on Cell reselection Tests for UE configured with relaxed measurement criterion | Qualcomm Incorporated | endorsed | R4-2016065 | - |
| R4-2017142 | Cell reselection to FR2 inter-frequency NR case under power saving | Ericsson | revised | R4-2016148 | R4-2017353 |
| R4-2017143 | WF on UE PRS measurement requirements | Huawei, HiSilicon | revised | - | R4-2017372 |
| R4-2017144 | UE positioning measurements: RSTD | Ericsson | revised | R4-2016391 | R4-2017384 |
| R4-2017145 | CR to update PRS-RSRP measurement requirements | Huawei, HiSilicon | agreed | R4-2015753 | - |
| R4-2017146 | CR on PRS-RSRP report mapping | CATT | agreed | R4-2015369 | - |
| R4-2017147 | CR to TS 38.133 on measurement period requirements for PRS RSTD, PRS-RSRP and UE Rx-Tx(section 9.9) | OPPO | endorsed | R4-2016999 | - |
| R4-2017148 | CR to introduce new measurement gap patterns for positioning in 36.133 | Huawei, HiSilicon | postponed | R4-2015758 | - |
| R4-2017149 | Revision of NR positioning measurement requirements applicability | Qualcomm Incorporated | withdrawn | - | - |
| R4-2017150 | Refinements on CSSF within gap to include NR positioning measurements | Nokia, Nokia Shanghai Bell | postponed | R4-2016156 | - |
| R4-2017151 | WF on UE PRS performance requirements | Intel Corporation | revised | - | R4-2017371 |
| R4-2017152 | NR RRM positioning test cases structure | Ericsson | endorsed | R4-2016400 | - |
| R4-2017153 | draftCR to introduce accuracy requirements for RSTD measurement | Huawei, HiSilicon | endorsed | R4-2015760 | - |
| R4-2017154 | CR on PRS-RSRP accuracy requirements | CATT | endorsed | R4-2014451 | - |
| R4-2017155 | UE Rx-Tx measurement accuracy | Ericsson | endorsed | R4-2016407 | - |
| R4-2017156 | Draft CR to TS 38.133: PRS configurations for NR Pos RRM tests | Intel Corporation | postponed | R4-2014572 | - |
| R4-2017157 | CR on conditions for NR RSTD measurement | CATT | endorsed | R4-2015370 | - |
| R4-2017158 | Work plan for NR Positioning RRM Performance part | Intel Corporation | approved | R4-2015567 | - |
| R4-2017159 | WF on gNB positioning measurement requirements | Ericsson | approved | - | - |
| R4-2017160 | Updated system simulation assumptions on gNB positioning measurement for deriving side conditions | Ericsson | revised | - | R4-2017370 |
| R4-2017161 | gNB timing positioning measurement report mapping update for k | Ericsson | agreed | R4-2016062 | - |
| R4-2017162 | CR on correcting SSB and RACH configuration in CSI-RS based beam failure detection and link recovery tests | Qualcomm CDMA Technologies | withdrawn | - | - |
| R4-2017163 | Square bracket removal in 38.133 section A.6 to A.8 | Ericsson | agreed | R4-2015165 | - |
| R4-2017164 | WF on NR eMIMO RRM Performance requirements | Samsung | revised | - | R4-2017375 |
| R4-2017165 | CR: Clarification of L1-SINR reporting with CSI-RS based CMR and dedicated IMR configured | Ericsson | agreed | R4-2015826 | - |
| R4-2017166 | CR to TS 38.133: Adding L1-SINR accuracy requirements | Nokia, Nokia Shanghai Bell | postponed | R4-2016240 | - |
| R4-2017167 | Draft test case CR on measurement procedure of L1-SINR for CSI-RS-based CMR and no dedicated IMR | Qualcomm CDMA Technologies | endorsed | R4-2014291 | - |
| R4-2017168 | DraftCR on L1-SINR measurement test case with CSI-RS CMR and dedicated IMR | Samsung | endorsed | R4-2014757 | - |
| R4-2017169 | DraftCR on L1-SINR measurement procedure tests with SSB based CMR and dedicated IMR | Huawei, HiSilicon | endorsed | R4-2015473 | - |
| R4-2017170 | Introduction of test cases for BFD and link recovery procedure for Scell | MediaTek inc. | postponed | R4-2014606 | - |
| R4-2017171 | Draft CR: Introduction of test case of link recovery with link recovery requests | Ericsson | postponed | R4-2015829 | - |
| R4-2017172 | Big CR: Introduction of Rel-16 NR FR1 RF WI RRM performance requirements | Huawei, HiSilicon | agreed | - | - |
| R4-2017173 | WF on test case for DL interruption due to Tx switching between two uplink carriers | Huawei, HiSilicon | approved | - | - |
| R4-2017174 | WF on R16 RRM enhancement part 1 | Intel Corporation | revised | - | R4-2017362 |
| R4-2017175 | CR on interruption due to active BWP switching on mulitple CCs | Huawei, HiSilicon | agreed | R4-2015505 | - |
| R4-2017176 | Correction to RRC based non-simultaneous multiple CC BWP | Ericsson | agreed | R4-2016166 | - |
| R4-2017177 | DraftCR on spatial relation switch test case | MediaTek inc. | endorsed | R4-2014775 | - |
| R4-2017178 | TC for RRC based spatial relation switch associated with a known DL-RS | Huawei, HiSilicon | endorsed | R4-2015500 | - |
| R4-2017179 | CR 38.133 TC3 MAC-CE based spatial relation info switching | Ericsson | endorsed | R4-2016015 | - |
| R4-2017180 | WF on R16 RRM enhancement part 2 | ZTE Corporation | revised | - | R4-2017363 |
| R4-2017181 | 38.133 CR on conditions for NR SRS carrier switching | Qualcomm, Inc. | withdrawn | - | - |
| R4-2017182 | CR to 38.133: Correction to SRS carrier based switching requirements | ZTE | agreed | R4-2015577 | - |
| R4-2017183 | E-UTRAN – NR FR2 interruptions at NR SRS carrier based switching (A.5.5.2.X) | Apple | revised | R4-2014227 | R4-2017364 |
| R4-2017184 | CR to TS 38.133 TC for E-UTRAN | OPPO | endorsed | R4-2014789 | - |
| R4-2017185 | TC for E-UTRAN | Huawei, HiSilicon | endorsed | R4-2015495 | - |
| R4-2017186 | Draft CR on test case for SA interruptions at NR SRS carrier based switching | ZTE | revised | R4-2015584 | R4-2017365 |
| R4-2017187 | 38133 CR for Test case of E-UTRAN NR FR1 interruptions at NR SRS carrier switching | Nokia, Nokia Shanghai Bell | revised | R4-2016052 | R4-2017366 |
| R4-2017188 | On TC2 configuration (SA interruptions at NR SRS carrier-based switching) | Ericsson | withdrawn | - | - |
| R4-2017189 | CR to 38.133: Correction to relaxed measurement requirements | ZTE | agreed | R4-2015575 | - |
| R4-2017190 | CR to 36.133: Correction to NR CGI reading interruption requirements | ZTE | agreed | R4-2015576 | - |
| R4-2017191 | CR on CGI reading requirements 38.133 | Huawei, HiSilicon | agreed | R4-2015774 | - |
| R4-2017192 | CR on CGI reading requirements 36.133 | Huawei, HiSilicon | agreed | R4-2015775 | - |
| R4-2017193 | Maintenance CR on NR CGI reading in 36.133 | Nokia, Nokia Shanghai Bell | agreed | R4-2016379 | - |
| R4-2017194 | DraftCR on SA CGI identification of E-UTRA neighbor cell Test Case | MediaTek inc. | endorsed | R4-2014776 | - |
| R4-2017195 | CR to introduce interfrequency FR2 CGI reading test for SA NR (TC2) | Ericsson | endorsed | R4-2015172 | - |
| R4-2017196 | Draft CR on test case for SA intra-frequency CGI identification of NR neighbor cell in FR1 | ZTE | endorsed | R4-2015583 | - |
| R4-2017197 | draftCR on TC for EN-DC inter-frequency CGI identification of NR neighbor cell in FR2 | Huawei, HiSilicon | endorsed | R4-2015776 | - |
| R4-2017198 | Test cases for EN-DC intra-frequency CGI identification of NR neighbour cell in FR1 | Nokia, Nokia Shanghai Bell | endorsed | R4-2016380 | - |
| R4-2017199 | CR to 38.133: Correction to mandatory gap pattern | ZTE | agreed | R4-2015578 | - |
| R4-2017200 | CR to 36.133: Introduce requirements for mandatory gap pattern | ZTE | agreed | R4-2015579 | - |
| R4-2017201 | WF on R16 RRM enhancement part 3 - FR2 inter-band CA RRM | Huawei | approved | - | - |
| R4-2017202 | WF on R16 RRM enhancement part 3 | Apple | approved | - | - |
| R4-2017203 | WF on R16 RRM enhancement part 3 - Inter-frequency measurement without MG | CMCC | approved | - | - |
| R4-2017204 | Draft CR on maintenance for inter-band FR2 CA RRM | Apple | endorsed | R4-2014275 | - |
| R4-2017205 | Correction on unknown SCell activation in FR2. | MediaTek inc. | agreed | R4-2014874 | - |
| R4-2017206 | CR on SCell activation requirements | Huawei, HiSilicon | withdrawn | - | - |
| R4-2017207 | CR to Multi-SCell activation for FR1 intra-band contiguous CA | Qualcomm Incorporated | agreed | R4-2016583 | - |
| R4-2017208 | CR on inter-frequency measurement without gap | Huawei, HiSilicon | withdrawn | - | - |
| R4-2017209 | Draft CR on UE behavior for UE specific CBW change | Apple | endorsed | R4-2014277 | - |
| R4-2017210 | Test case of SCell activation and deactivation of multiple unknown SCells in FR1 with single activation/deactivation command | Apple | endorsed | R4-2014276 | - |
| R4-2017211 | DraftCR on multiple SCell activation with FR1+FR2 unknown cells in NR-DC Test Case | MediaTek inc. | endorsed | R4-2014777 | - |
| R4-2017212 | draftCR to introduce multiple SCell activation TC2 | Huawei, HiSilicon | endorsed | R4-2015773 | - |
| R4-2017213 | Test case for inter-frequency measurement without gap: SA event triggered reporting tests for FR1 when DRX is used (A.6.6.2.X) | Apple | endorsed | R4-2014226 | - |
| R4-2017214 | CR on TS38.133 SA event triggered reporting tests for FR2 without gap when DRX is used (A.7.6.2.X) | MediaTek inc. | revised | R4-2014365 | R4-2017369 |
| R4-2017215 | Draft CR to TS 38.133: SA event triggered reporting tests for FR1 without gap when DRX is not used (A.6.6.2.X) | CMCC | endorsed | R4-2014732 | - |
| R4-2017216 | Test case for Inter-frequency measurements: SA event triggered reporting tests for FR2 without gap when DRX is not used | Huawei, HiSilicon | endorsed | R4-2015497 | - |
| R4-2017217 | Test case of UE specific CBW change on FR1 NR PSCell with non-DRX in synchronous EN-DC | Apple | endorsed | R4-2014279 | - |
| R4-2017218 | Draft CR on TC for UE specific CBW change on FR2 NR PCell in NR SA | NEC | endorsed | R4-2015302 | - |
| R4-2017219 | draftCR on TC for UE specific CBW change on FR2 NR PSCell in EN-DC | Huawei, HiSilicon | endorsed | R4-2015777 | - |
| R4-2017220 | TC3: UE specific CBW change on FR1 NR PCell in NR SA (A.6.5.7) | Ericsson | endorsed | R4-2016169 | - |
| R4-2017221 | DraftCR on SCell activation and deactication delay test for FR2 inter-band CA | Huawei, HiSilicon | endorsed | R4-2015476 | - |
| R4-2017222 | Work plan of Rel-16 NR RRM enhancements WI performance part | Intel Corporation, ZTE Corporation, Apple | approved | R4-2014566 | - |
| R4-2017223 | WF on remaining issues on CSI-RS based L3 measurement requirements (core part) | Apple | approved | - | - |
| R4-2017224 | WF on performance requirements of CSI-RS based L3 measurement | CATT | revised | - | R4-2017367 |
| R4-2017225 | CR for TS36.133, Adding requirements for CSI-RS based L3 measurement | CATT | agreed | R4-2014413 | - |
| R4-2017226 | CR on abbreviations about CSI-RS based measurement in 38.133. | CATT | agreed | R4-2014429 | - |
| R4-2017227 | CR on R16 CSI-RS based L3 measurements | vivo | agreed | R4-2014531 | - |
| R4-2017228 | CR on CSI-RS based intra-frequency measurement requirements | Huawei, HiSilicon | agreed | R4-2015490 | - |
| R4-2017229 | Work plan for CSI-RS based L3 measurements | CATT | approved | R4-2014435 | - |
| R4-2017230 | Updated link-level simulation assumptions for CSI-RS based L3 measurements | CATT | approved | R4-2014436 | - |
| R4-2017231 | Draft test case CR on EN-DC event triggered reporting tests without gap for NR neighbor cell in FR2 | Qualcomm CDMA Technologies | endorsed | R4-201418 | - |
| R4-2017232 | Draft test case CR on EN-DC CSI-RSRP measurement accuracy for NR neighbor cell in FR2 | Qualcomm CDMA Technologies | endorsed | R4-2014287 | - |
| R4-2017233 | Test case for CSI-RS based L3 measurement | CATT | endorsed | R4-2014444 | - |
| R4-2017234 | RRM test cases for CSI-RS L3 intra-frequency and inter-frequency measurements | Xiaomi | endorsed | R4-2014665 | - |
| R4-2017235 | Introduction of test case for CSI-SINR in SA FR2 | MediaTek inc. | endorsed | R4-2014626 | - |
| R4-2017236 | CR to TS 38.133: EN-DC event triggered reporting tests for NR neighbour cell in FR2 (PScell in FR1) for CSI-RS L3 inter-frequency measurements(A.5.6.x) | OPPO | revised | R4-2014793 | R4-2017341 |
| R4-2017237 | Draft CR on test case for SA CSI-RS based measurement in FR2 and CSI-RSRQ accuracy in FR2 | ZTE | endorsed | R4-2015586 | - |
| R4-2017238 | 38.133 CR on the test case of EN-DC event triggered reporting for intra-frequency CSI-RS based measurements in FR1 | Nokia, Nokia Shanghai Bell | endorsed | R4-2016050 | - |
| R4-2017239 | 38.133 CR on the test cases of EN-DC measurement accuracy in FR1 for CSI-RS based intra-frequency and inter-frequency measurements | Nokia, Nokia Shanghai Bell | endorsed | R4-2016051 | - |
| R4-2017240 | CR on IDLE state cell re-selection requirements for HST in 38.133 | vivo,Huawei, HiSilicon | agreed | R4-2014964 | - |
| R4-2017241 | CR on IDLE state cell re-selection requirements for HST in 36.133 | vivo, Huawei, HiSilicon | agreed | R4-2014981 | - |
| R4-2017242 | 38.133 CR on CSSFintra for measurement period for intra-frequency measurements in connected mode for Rel-16 NR HST | CMCC | agreed | R4-2014691 | - |
| R4-2017243 | CR on release independent for Rel.16 NR HST RRM requirements | CMCC | agreed | R4-2014695 | - |
| R4-2017244 | CR on release independent for Rel.16 NR HST RRM requirements | CMCC | agreed | R4-2014697 | - |
| R4-2017245 | Accuracy requirements for NR high speed | Huawei, HiSilicon | withdrawn | - | - |
| R4-2017246 | CR on test case for EUTRAN-NR cell re-selection in HST | vivo | endorsed | R4-2014533 | - |
| R4-2017247 | CR-NR HST RRM test cases | Qualcomm, Inc. | endorsed | R4-2014631 | - |
| R4-2017248 | Draft CR on NR-NR intra-frequency reselection for FR1 for high speed scenario | CMCC | endorsed | R4-2014692 | - |
| R4-2017249 | Test cases for NR -NR cell identification in connected mode for high speed | Ericsson | endorsed | R4-2015147 | - |
| R4-2017250 | Test cases for inter-RAT cell identification in connected mode for HST | Huawei, HiSilicon | endorsed | R4-2015493 | - |
| R4-2017251 | CR to TS 38.133: Test cases for L1-RSRP measurement for beam reporting for NR HST | Nokia, Nokia Shanghai Bell | endorsed | R4-2016215 | - |
| R4-2017252 | Big CR: NR HST RRM performance requirements | CMCC | agreed | - | - |
| R4-2017253 | Big CR on 2-step RA type RRM performance requirements | Nokia, Nokia Shanghai Bell | agreed | R4-2014933 | - |
| R4-2017254 | WF on 2-step RACH RRM test cases | ZTE Corporation | approved | - | - |
| R4-2017255 | CR Maintenance 2-step RACH RRM requirements | Nokia, Nokia Shanghai Bell | agreed | R4-2014935 | - |
| R4-2017256 | [draft CR] 2-step RACH test case | ZTE Corporation | endorsed | R4-2014008 | - |
| R4-2017257 | Draft CR on 2-step RA type CBRA in FR2 for NR Standalone | Nokia, Nokia Shanghai Bell | endorsed | R4-2014936 | - |
| R4-2017258 | Draft CR on TC for 2-step RA type contention based RA in FR1 and FR2 NR cells for EN-DC | NEC | endorsed | R4-2015303 | - |
| R4-2017259 | Draft CR: RMC of MsgA for 2-step RACH test | Ericsson | endorsed | R4-2015810 | - |
| R4-2017260 | Draft CR: Introduction of 2-step RACH CFRA tests | Ericsson | endorsed | R4-2015811 | - |
| R4-2017261 | DraftCR on RRM core requirements for FR2 new FWA UE in 38.133 | Huawei, HiSilicon | endorsed | R4-2015480 | - |
| R4-2017262 | Big CR on FR2 new FWA UE RRM requirements in TS 36.133 | Ericsson | agreed | R4-2016178 | - |
| R4-2017263 | DraftCR on RRM performance requirements for FR2 new FWA UE in 38.133 | Huawei, HiSilicon | endorsed | R4-2015481 | - |
| R4-2017264 | Big CR: NR FR2 new FWA UE RRM requirements (TS 38.133) | Huawei, HiSilicon | agreed | - | - |
| R4-2017265 | Work plan for R17 FeRRM | Apple | approved | R4-2014286 | - |
| R4-2017266 | Work plan of R17 NR and MR-DC measurement gap enhancements WI | MediaTek inc., Intel Corporation | approved | R4-2014628 | - |
| R4-2017267 | Work plan for enhancement for NR high speed train scenario in FR1 | CMCC | approved | R4-2014705 | - |
| R4-2017268 | WF on NR NTN RRM requirements | THALES | revised | - | R4-2017350 |
| R4-2017269 | WF on NR UE Power Saving Enhancements | MediaTek | approved | - | - |
| R4-2017270 | Work plan of Rel-17 Power Saving Enhancements | MediaTek inc. | approved | R4-2014366 | - |
| R4-2017271 | Email discussion summary for [97e][201] NR\_NewRAT\_RRM\_Core | Moderator (Huawei) | noted | R4-2017000 | - |
| R4-2017272 | Email discussion summary for [97e][202] NR\_NewRAT\_RRM\_Perf | Moderator (Ericsson) | noted | R4-2017001 | - |
| R4-2017273 | Email discussion summary for [97e][203] LTE\_RRM\_maintenance | Moderator (Ericsson) | noted | R4-2017002 | - |
| R4-2017274 | Email discussion summary for [97e][204] R16\_NR\_RRM\_maintenance | Moderator (Apple) | noted | R4-2017003 | - |
| R4-2017275 | Email discussion summary for [97e][205] NR\_unlic\_RRM\_1 | Moderator (Ericsson) | noted | R4-2017004 | - |
| R4-2017276 | Email discussion summary for [97e][206] NR\_unlic\_RRM\_2 | Moderator (Nokia) | noted | R4-2017005 | - |
| R4-2017277 | Email discussion summary for [97e][207] NR\_Mob\_enh\_RRM | Moderator (Apple) | noted | R4-2017006 | - |
| R4-2017278 | Email discussion summary for [97e][208] 5G\_V2X\_NRSL\_RRM | Moderator (LG Electronics) | noted | R4-2017007 | - |
| R4-2017279 | Email discussion summary for [97e][209] NR\_IAB\_RRM | Moderator (ZTE Corporation) | noted | R4-2017008 | - |
| R4-2017280 | Email discussion summary for [97e][210] LTE\_NR\_DC\_CA\_RRM\_1 | Moderator (Nokia) | noted | R4-2017009 | - |
| R4-2017281 | Email discussion summary for [97e][211] LTE\_NR\_DC\_CA\_RRM\_2 | Moderator (Ericsson) | noted | R4-2017010 | - |
| R4-2017282 | Email discussion summary for [97e][212] NR\_UE\_pow\_sav\_RRM | Moderator (CATT) | noted | R4-2017011 | - |
| R4-2017283 | Email discussion summary for [97e][213] NR\_pos\_RRM\_1 | Moderator (Huawei) | noted | R4-2017012 | - |
| R4-2017284 | Email discussion summary for [97e][214] NR\_pos\_RRM\_2 | Moderator (Intel Corporation) | noted | R4-2017013 | - |
| R4-2017285 | Email discussion summary for [97e][215] NR\_pos\_RRM\_3 | Moderator (Ericsson) | noted | R4-2017014 | - |
| R4-2017286 | Email discussion summary for [97e][216] NR\_eMIMO\_RRM | Moderator (Samsung) | noted | R4-2017015 | - |
| R4-2017287 | Email discussion summary for [97e][217] NR\_RF\_FR1\_RRM | Moderator (Huawei) | noted | R4-2017016 | - |
| R4-2017288 | Email discussion summary for [97e][218] NR\_RRM\_Enh\_RRM\_1 | Moderator (Intel Corporation) | noted | R4-2017017 | - |
| R4-2017289 | Email discussion summary for [97e][219] NR\_RRM\_Enh\_RRM\_2 | Moderator (ZTE Corporation) | noted | R4-2017018 | - |
| R4-2017290 | Email discussion summary for [97e][220] NR\_RRM\_Enh\_RRM\_3 | Moderator (Apple) | noted | R4-2017019 | - |
| R4-2017291 | Email discussion summary for [97e][221] NR\_CSIRS\_L3meas\_RRM\_1 | Moderator (CATT) | noted | R4-2017020 | - |
| R4-2017292 | Email discussion summary for [97e][222] NR\_CSIRS\_L3meas\_RRM\_2 | Moderator (OPPO) | noted | R4-2017033 | - |
| R4-2017293 | Email discussion summary for [97e][223] NR\_HST\_RRM | Moderator (CMCC) | noted | R4-2017022 | - |
| R4-2017294 | Email discussion summary for [97e][224] NR\_2step\_RACH\_RRM | Moderator (ZTE Corporation) | noted | R4-2017023 | - |
| R4-2017295 | Email discussion summary for [97e][225] LTE\_eMTC5\_RRM | Moderator (Ericsson) | noted | R4-2017024 | - |
| R4-2017296 | Email discussion summary for [97e][226] NB\_IOTenh3\_RRM | Moderator (Huawei) | noted | R4-2017025 | - |
| R4-2017297 | Email discussion summary for [97e][227] LTE\_feMob\_RRM | Moderator (Nokia) | noted | R4-2017026 | - |
| R4-2017298 | Email discussion summary for [97e][228] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM | Moderator (Huawei) | noted | R4-2017027 | - |
| R4-2017299 | Email discussion summary for [97e][229] NR\_RRM\_enh2 | Moderator (Apple) | noted | R4-2017028 | - |
| R4-2017300 | Email discussion summary for [97e][230] NR\_MG\_enh | Moderator (MediaTek) | noted | R4-2017029 | - |
| R4-2017301 | Email discussion summary for [97e][231] NR\_HST\_FR1\_enh | Moderator (CMCC) | noted | R4-2017030 | - |
| R4-2017302 | Email discussion summary for [97e][232] NR\_NTN\_solutions\_RRM | Moderator (THALES) | noted | R4-2017031 | - |
| R4-2017303 | Email discussion summary for [97e][233] NR\_UE\_pow\_sav\_enh\_RRM | Moderator (MediaTek) | noted | R4-2017032 | - |
| R4-2017304 | CR 38.133 Removal of brackets for SCell Dormancy and Direct SCell Activation | Ericsson | agreed | R4-2016020 | - |
| R4-2017305 | Measurement requirements for NR-U | Ericsson | agreed | R4-2016419 | - |
| R4-2017306 | Evaluation assumptions for R17 RLM/BFD relaxation | vivo, MediaTek | approved | R4-2014534 | - |
| R4-2017307 | CR to SSB-less SCell activation delay requirement for deactivated FR1 SCell | Qualcomm | withdrawn | - | - |
| R4-2017308 | Test cases for LTE conditional handover | Nokia, Nokia Shanghai Bell | agreed | R4-2016384 | - |
| R4-2017309 | Correction to NR FR1 DL active BWP switch of Cell with non-DRX in SA (A.6.5.6.2.1) | Ericsson | agreed | R4-2016163 | - |
| R4-2017310 | CR to TS 38.133: TC for EN-DC CSI-RSRQ measurement accuracy for all NR cells in FR1(A.4.7.x) | OPPO | endorsed | R4-2014794 | - |
| R4-2017311 | CR to TS 38.133: TC for EN-DC CSI-RSRQ measurement accuracy for all NR cells in FR2(A.5.7.x) | OPPO | endorsed | R4-2014795 | - |
| R4-2017312 | CR on test cases for EN-DC CSI-SINR measurement accuracy | vivo | endorsed | R4-2014532 | - |
| R4-2017313 | CR to introduce TC for CSI-SINR measurement accuracy for FR1 SA and FR2 EN-DC | Huawei, HiSilicon | endorsed | R4-2015789 | - |
| R4-2017314 | RRM test cases for CSI-RS L3 measurement performance | Xiaomi | endorsed | R4-2014666 | - |
| R4-2017315 | CR on introduce the gain to CSI-RSRP measurements point in FR1 and FR2 | Xiaomi | withdrawn | - | - |
| R4-2017316 | CR on scheduling restriction for CSI-RS based intra-frequency measurement | Qualcomm CDMA Technologies | revised | R4-2014188 | R4-2017349 |
| R4-2017317 | CR on CSSF with both CSI-RS and SSB | Apple | agreed | R4-2014235 | - |
| R4-2017318 | CR on conditions for NR CSI-RS based L3 measurement | CATT | endorsed | R4-2014434 | - |
| R4-2017319 | 38.133 CR on the intra-frequency CSI-RSRP accuracy requirements | Nokia, Nokia Shanghai Bell | endorsed | R4-2016047 | - |
| R4-2017320 | CR on performance requirement for CSI-RSRQ L3 measurement | CATT | revised | R4-2014442 | R4-2017348 |
| R4-2017321 | CR to introduce CSI-SINR accuracy requirements and report mapping | Huawei, HiSilicon | endorsed | R4-2015788 | - |
| R4-2017322 | Correction on the synchronous condition for DAPS handover | Huawei, HiSilicon | agreed | R4-2015502 | - |
| R4-2017323 | CR to TS 38.133 on DCI based BWP switch requirements for cross carrier scheduling | NEC | agreed | R4-2015305 | - |
| R4-2017324 | Draft CR to TS 38.133: Test case for DL interruptions at UE switching between two uplink carriers in FDD+TDD inter-band CA case | China Telecom | endorsed | R4-2014504 | - |
| R4-2017325 | Draft CR to TS 38.133: Test case for DL interruptions at UE switching between two uplink carriers in TDD+TDD inter-band CA case | CMCC | revised | R4-2014734 | R4-2017346 |
| R4-2017326 | Test case for DL Interruptions at UE switching between LTE 1Tx carrier and NR 2Tx carrier in inter-band ENDC | Huawei, HiSilicon | endorsed | R4-2015487 | - |
| R4-2017327 | draftCR to introduce accuracy for EMR 36.133 | Huawei, HiSilicon | endorsed | R4-2015748 | - |
| R4-2017328 | Accuracy requirements for MR-DC EMR (38.133) | Nokia Corporation | revised | R4-2016386 | R4-2017361 |
| R4-2017329 | LS on TCI state indication at Direct SCell activation | RAN4 | approved | R4-2017124 | - |
| R4-2017330 | CR on TS38.133 interruption time for CA with non-aligned frame boundaries | MediaTek inc. | agreed | R4-2017128 | - |
| R4-2017331 | WF on CSSF calculation for Inter-RAT MO | Huawei, HiSilicon | approved | - | - |
| R4-2017332 | NR-U RRM Performance Work Plan | Qualcomm Incorporated | approved | R4-2016567 | - |
| R4-2017333 | LS on SCell activation/deactivation when sCellDeactivationTimer is not configured | Nokia | revised | - | R4-2017382 |
| R4-2017334 | CR on TS38.133 for cell reselection test case | MediaTek inc. | revised | R4-2017046 | R4-2017368 |
| R4-2017335 | CR to TS 38.133 on DCI based BWP switch requirements applicability | NEC | agreed | R4-2015300 | - |
| R4-2017336 | CR on MO merge in R15 | MediaTek inc. | agreed | R4-2014765 | - |
| R4-2017337 | CR on introducing CSI-RS configurations for RRM | Qualcomm CDMA Technologies | endorsed | R4-2014288 | - |
| R4-2017338 | Introducing reference to the source of the Lmax and NRLM. | Nokia, Nokia Shanghai Bell | agreed | R4-2015876 | - |
| R4-2017339 | Test cases for mandatory measurement gap | Ericsson | endorsed | R4-2015175 | - |
| R4-2017340 | Draft CR on test case for SA event triggered reporting tests with additional mandatory gap pattern | ZTE | endorsed | R4-2015585 | - |
| R4-2017341 | CR to TS 38.133: EN-DC event triggered reporting tests for NR neighbour cell in FR2 (PScell in FR2) for CSI-RS L3 inter-frequency measurements(A.5.6.x) | OPPO | endorsed | R4-2017236 | - |
| R4-2017342 | CR on RRC-based BWP switch requirements | Huawei, HiSilicon | agreed | R4-2015529 | - |
| R4-2017343 | CR to remove intra-frequency ECID requirements for NE-DC 36133 R15 | Huawei, HiSilicon | withdrawn | - | - |
| R4-2017344 | CR to remove inter-RAT ECID requirements for NE-DC 38133 R15 | Huawei, HiSilicon | postponed | R4-2015733 | - |
| R4-2017345 | CR: Interruption requirement for NR V2X synchronization source chang | Qualcomm, Inc. | agreed | R4-2014635 | - |
| R4-2017346 | Draft CR to TS 38.133: Test case for DL interruptions at UE switching between two uplink carriers in TDD+TDD inter-band CA case | CMCC | endorsed | R4-2017325 | - |
| R4-2017347 | CR on V2X UE Congestion Control Measurement Test | MediaTek inc. | endorsed | R4-2017111 | - |
| R4-2017348 | CR on performance requirement for CSI-RSRQ L3 measurement | CATT | endorsed | R4-2017320 | - |
| R4-2017349 | CR on scheduling restriction for CSI-RS based intra-frequency measurement | Qualcomm CDMA Technologies | agreed | R4-2017316 | - |
| R4-2017350 | WF on NR NTN RRM requirements | THALES | approved | R4-2017268 | - |
| R4-2017351 | Intra-band Inter-frequency sync DAPS handover test in SA for FR1 | Intel Corporation | agreed | R4-2017096 | - |
| R4-2017352 | Draft Big CR: Introduction of Rel-16 NR-U RRM performance requirements | Ericsson | endorsed | - | - |
| R4-2017353 | Cell reselection to FR2 inter-frequency NR case under power saving | Ericsson | endorsed | R4-2017142 | - |
| R4-2017354 | CR on EMR requirements in 36.133 | Huawei, HiSilicon, MediaTek | agreed | R4-2017121 | - |
| R4-2017355 | CR on UE requirement for MR-DC early measurement reporting in 38.133 | Nokia, Nokia Shanghai Bell | agreed | R4-2017120 | - |
| R4-2017356 | LS on RAN4 agreements for MR-DC Idle mode CA measurements | ZTE | revised | R4-2017119 | R4-2017390 |
| R4-2017357 | WF on MR-DC RRM requirements for Idle mode CA measurements | Nokia, Nokia Shanghai Bell | approved | R4-2017118 | - |
| R4-2017358 | WF on Test cases for MR-DC Idle mode CA measurements | Nokia, Nokia Shanghai Bell | approved | R4-2017122 | - |
| R4-2017359 | Draft Big CR: Introduction of Rel-16 MR-DC EMR RRM performance requirements (TS 38.133) | Nokia | endorsed | - | - |
| R4-2017360 | Draft Big CR: Introduction of Rel-16 MR-DC EMR RRM performance requirements (TS 36.133) | Huawei, HiSilicon | endorsed | - | - |
| R4-2017361 | Accuracy requirements for MR-DC EMR (38.133) | Nokia Corporation | endorsed | R4-2017328 | - |
| R4-2017362 | WF on R16 RRM enhancement part 1 | Intel Corporation | approved | R4-2017174 | - |
| R4-2017363 | WF on R16 RRM enhancement part 2 | ZTE Corporation | approved | R4-2017180 | - |
| R4-2017364 | E-UTRAN – NR FR2 interruptions at NR SRS carrier based switching (A.5.5.2.X) | Apple | endorsed | R4-2017183 | - |
| R4-2017365 | Draft CR on test case for SA interruptions at NR SRS carrier based switching | ZTE | endorsed | R4-2017186 | - |
| R4-2017366 | 38133 CR for Test case of E-UTRAN NR FR1 interruptions at NR SRS carrier switching | Nokia, Nokia Shanghai Bell | endorsed | R4-2017187 | - |
| R4-2017367 | WF on performance requirements of CSI-RS based L3 measurement | CATT | approved | R4-2017224 | - |
| R4-2017368 | CR on TS38.133 for cell reselection test case | MediaTek inc. | revised | R4-2017334 | R4-2017378 |
| R4-2017369 | CR on TS38.133 SA event triggered reporting tests for FR2 without gap when DRX is used (A.7.6.2.X) | MediaTek inc. | revised | R4-2017214 | R4-2017387 |
| R4-2017370 | Updated system simulation assumptions on gNB positioning measurement for deriving side conditions | Ericsson | revised | R4-2017160 | R4-2017385 |
| R4-2017371 | WF on UE PRS performance requirements | Intel Corporation | approved | R4-2017151 | - |
| R4-2017372 | WF on UE PRS measurement requirements | Huawei, HiSilicon | approved | R4-2017143 | - |
| R4-2017373 | Draft Big CR: Introduction of Rel-16 NR Positioning RRM performance requirements and test cases (TS 38.133) | Ericsson, Intel | endorsed | - | - |
| R4-2017374 | WF on further test cases for LTE feMob | Nokia, Nokia Shanghai Bell | approved | R4-2017078 | - |
| R4-2017375 | WF on NR eMIMO RRM Performance requirements | Samsung | approved | R4-2017164 | - |
| R4-2017376 | Draft Big CR: Introduction of Rel-16 NR eMIMO RRM performance requirements and test cases | Samsung | endorsed | - | - |
| R4-2017377 | CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | agreed | R4-2017041 | - |
| R4-2017378 | CR on TS38.133 for cell reselection test case | MediaTek inc. | agreed | R4-2017368 | - |
| R4-2017379 | [CR] NR Perf Maintenance R16 Cat A | ZTE Corporation | agreed | - | - |
| R4-2017380 | CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel16 | Apple | agreed | R4-2016374 | - |
| R4-2017381 | LS on measuring CSI-RS during SCell activation. | RAN4 | approved | R4-2017083 | - |
| R4-2017382 | LS on SCell activation/deactivation when sCellDeactivationTimer is not configured | Nokia | noted | R4-2017333 | - |
| R4-2017383 | WF on test cases for IAB-MTs | ZTE Corporation | approved | R4-2017115 | - |
| R4-2017384 | UE positioning measurements: RSTD | Ericsson | agreed | R4-2017144 | - |
| R4-2017385 | Updated system simulation assumptions on gNB positioning measurement for deriving side conditions | Ericsson | approved | R4-2017370 | - |
| R4-2017386 | Draft Big CR: Introduction of Rel-16 NR RRM enhancements WI performance requirements and test cases | Intel Corporation, ZTE Corporation, Apple | endorsed | - | - |
| R4-2017387 | CR on TS38.133 SA event triggered reporting tests for FR2 without gap when DRX is used (A.7.6.2.X) | MediaTek inc. | endorsed | R4-2017369 | - |
| R4-2017388 | Draft Big CR: Introduction of Rel-16 CSI-RS based L3 measurement RRM performance requirements | CATT | endorsed | - | - |
| R4-2017389 | Draft Big CR: Introduction of Rel-16 CSI-RS based L3 measurement RRM test cases | OPPO | endorsed | - | - |
| R4-2017390 | LS on RAN4 agreements for MR-DC Idle mode CA measurements | RAn4 | approved | R4-2017356 | - |
| R4-2017391 | (reserved) | RRM Session | reserved | - | - |
| R4-2017392 | (reserved) | RRM Session | reserved | - | - |
| R4-2017393 | (reserved) | RRM Session | reserved | - | - |
| R4-2017394 | (reserved) | RRM Session | reserved | - | - |
| R4-2017395 | (reserved) | RRM Session | reserved | - | - |
| R4-2017396 | (reserved) | RRM Session | reserved | - | - |
| R4-2017397 | (reserved) | RRM Session | reserved | - | - |
| R4-2017398 | (reserved) | RRM Session | reserved | - | - |
| R4-2017399 | Email discussion summary for [97e][301] LTE\_BSRF\_Maintenance | Moderator (Ericsson) | revised | - | R4-2017606 |
| R4-2017400 | Email discussion summary for [97e][302] NR\_BSRF\_Maintenance | Moderator (Ericsson) | revised | - | R4-2017602 |
| R4-2017401 | Email discussion summary for [97e][303] NR\_Conformance\_Maintenance | Moderator (Huawei) | revised | - | R4-2017603 |
| R4-2017402 | Email discussion summary for [97e][304] NR\_EMC | Moderator (ZTE) | revised | - | R4-2017604 |
| R4-2017403 | Email discussion summary for [97e][305] NR\_unlic\_RF\_BS | Moderator (Nokia) | revised | - | R4-2017608 |
| R4-2017404 | Email discussion summary for [97e][306] NR\_unlic\_RF\_Conformance | Moderator (ZTE) | revised | - | R4-2017609 |
| R4-2017405 | Email discussion summary for [97e][307] NR\_IAB\_General | Moderator (CATT) | revised | - | R4-2017614 |
| R4-2017406 | Email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance | Moderator (Qualcomm) | revised | - | R4-2017615 |
| R4-2017407 | Email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 | Moderator (Nokia) | revised | - | R4-2017616 |
| R4-2017408 | Email discussion summary for [97e][310] NR\_IAB\_Conformance\_Part2 | Moderator (Samsung) | revised | - | R4-2017617 |
| R4-2017409 | Email discussion summary for [97e][311] OTA\_BS\_Testing | Moderator (Huawei) | revised | - | R4-2017627 |
| R4-2017410 | Email discussion summary for [97e][312] NTN\_Solutions | Moderator (THALES) | revised | - | R4-2017630 |
| R4-2017411 | Email discussion summary for [97e][313] LTE\_Demod\_Maintenance | Moderator (Huawei) | revised | - | R4-2017607 |
| R4-2017412 | Email discussion summary for [97e][314] NR\_Demod\_Maintenance | Moderator (Intel) | revised | - | R4-2017605 |
| R4-2017413 | Email discussion summary for [97e][315] NR\_unlic\_Demod\_UE | Moderator (Qualcomm) | revised | - | R4-2017610 |
| R4-2017414 | Email discussion summary for [97e][316] NR\_unlic\_Demod\_BS | Moderator (Huawei) | revised | - | R4-2017611 |
| R4-2017415 | Email discussion summary for [97e][317] V2X\_Demod\_Part1 | Moderator (LGE) | revised | - | R4-2017612 |
| R4-2017416 | Email discussion summary for [97e][318] V2X\_Demod\_Part2 | Moderator (Intel) | revised | - | R4-2017613 |
| R4-2017417 | Email discussion summary for [97e][319] NR\_IAB\_Demod | Moderator (Nokia) | revised | - | R4-2017618 |
| R4-2017418 | Email discussion summary for [97e][320] MR\_DC\_Demod | Moderator (Ericsson) | noted | - | - |
| R4-2017419 | Email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod | Moderator (CATT) | revised | - | R4-2017619 |
| R4-2017420 | Email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 | Moderator (Ericsson) | revised | - | R4-2017620 |
| R4-2017421 | Email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 | Moderator (Huawei) | revised | - | R4-2017621 |
| R4-2017422 | Email discussion summary for [97e][324] NR\_eMIMO\_Demod | Moderator (Samsung) | revised | - | R4-2017622 |
| R4-2017423 | Email discussion summary for [97e][325] NR\_DL256QAM\_FR2\_Demod | Moderator (China Telecomm) | revised | - | R4-2017623 |
| R4-2017424 | Email discussion summary for [97e][326] NR\_HST\_Demod\_UE | Moderator (CMCC) | revised | - | R4-2017460 |
| R4-2017425 | Email discussion summary for [97e][327] NR\_HST\_Demod\_BS | Moderator (Nokia) | revised | - | R4-2017625 |
| R4-2017426 | Email discussion summary for [97e][328] NR\_perf\_enh\_Demod | Moderator (China Telecomm) | revised | - | R4-2017626 |
| R4-2017427 | Email discussion summary for [97e][329] NR\_2step\_RACH\_Demod | Moderator (ZTE) | revised | - | R4-2017628 |
| R4-2017428 | Email discussion summary for [97e][330] NR\_MIMO\_OTA | Moderator (CAICT) | revised | - | R4-2017629 |
| R4-2017429 | Email discussion summary for [97e][331] FR2\_enhTestMethods | Moderator (Apple) | revised | - | R4-2017631 |
| R4-2017430 | CR to 37.105 on Removal of additional limit for Band 1 | Ericsson | agreed | R4-2016353 | - |
| R4-2017431 | CR to 37.145-2 on Removal of additional limit for Band 1 | Ericsson | agreed | R4-2016357 | - |
| R4-2017432 | CR to TS 37.105: addition of the OBUE applicability table, Rel-15 | Huawei | agreed | R4-2016430 | - |
| R4-2017433 | CR to TS 37.145-1: addition of the OBUE applicability table, Rel-15 | Huawei | agreed | R4-2016431 | - |
| R4-2017434 | CR to TS 37.145-2: addition of the OBUE applicability table, Rel-15 | Huawei | agreed | R4-2016432 | - |
| R4-2017435 | CR to TS 37.113 on Voltage dips and interruptions, Release 15 | Ericsson | agreed | R4-2015100 | - |
| R4-2017436 | CR to TS 37.113 on Voltage dips and interruptions, Release 16 | Ericsson | agreed | R4-2015101 | - |
| R4-2017437 | CR to TS 38.113 on Voltage dips and interruptions, Release 15 | Ericsson | agreed | R4-2015102 | - |
| R4-2017438 | CR to TS 38.113 on Voltage dips and interruptions, Release 16 | Ericsson | agreed | R4-2015103 | - |
| R4-2017439 | CR to TS 38.113 on Performance criteria for transient phenomena, Release 15 | Ericsson | not pursued | R4-2015104 | - |
| R4-2017440 | CR to TS 38.113 on Performance criteria for transient phenomena, Release 16 | Ericsson | withdrawn | - | - |
| R4-2017441 | CR to TS 38.113: correction of the scope and other technical improvements, Rel-15 | Huawei | agreed | R4-2015958 | - |
| R4-2017442 | CR to TS 38.175: Radiated emission, IAB | ZTE Corporation, Ericsson | agreed | R4-2015027 | - |
| R4-2017443 | CR to TS 38.175 on Spatial Exclusion for IAB EMC Radiated Immunity test | Ericsson | not pursued | R4-2015112 | - |
| R4-2017444 | CR to TS 38.175 on Voltage dips and interruptions, Release 16 | Ericsson | agreed | R4-2015106 | - |
| R4-2017445 | WF on IAB EMC test/performance requirements | ZTE | approved | - | - |
| R4-2017446 | CR to TS 38.175 on IAB EMC performance requirements | Ericsson | agreed | R4-2015114 | - |
| R4-2017447 | CR: Correction of FRC for PDSCH demodulation requirements | Ericsson | withdrawn | - | - |
| R4-2017448 | CR: Updates to OCNG pattern reference | Huawei Technologies Sweden AB | agreed | R4-2016424 | - |
| R4-2017449 | CR: Correction on OCNG pattern | Qualcomm, Inc. | agreed | R4-2016448 | - |
| R4-2017450 | CR: Correction on OCNG pattern | Qualcomm, Inc. | agreed | R4-2016449 | - |
| R4-2017451 | CR to 37.107 with update of EDT level | Nokia, Nokia Shanghai Bell | agreed | R4-2015376 | - |
| R4-2017452 | CR on cleanup for LTE FeMBMS(Rel-14) | Huawei, HiSilicon | agreed | R4-2015589 | - |
| R4-2017453 | CR on cleanup for LTE FeMBMS(Rel-15) | Huawei, HiSilicon | agreed | R4-2015590 | - |
| R4-2017454 | CR on cleanup for LTE FeMBMS(Rel-16) | Huawei, HiSilicon | agreed | R4-2015591 | - |
| R4-2017455 | CR for 36.101: Cleanup for performance requirements of sTTI (Rel-15) | Huawei, HiSilicon | agreed | R4-2015668 | - |
| R4-2017456 | CR for 36.101: Cleanup for performance requirements of sTTI (Rel-16) | Huawei, HiSilicon | revised | R4-2015669 | R4-2017680 |
| R4-2017457 | CR: Cleanup for NPDSCH performance requirements for multi-TB interleaved transmission in TS 36.101 | Huawei, HiSilicon | agreed | R4-2015631 | - |
| R4-2017458 | Clean up of CSI-RS based PMI reporting test for non-BL UEs | Ericsson | agreed | R4-2015837 | - |
| R4-2017459 | CR on cleanup for LTE-based 5G terrestrial broadcast | Huawei, HiSilicon | agreed | R4-2015613 | - |
| R4-2017460 | Email discussion summary for [97e][326] NR\_HST\_Demod\_UE | Moderator (CMCC) | revised | R4-2017424 | R4-2017624 |
| R4-2017461 | WF on NR-U remaining BS RF core requirements | Nokia | approved | - | - |
| R4-2017462 | CR to TS 38.104 with NR-U remaining open issues updates | Nokia, Nokia Shanghai Bell | agreed | R4-2015371 | - |
| R4-2017463 | CR to 36.104: Introduction of n96 medium range requirements | Nokia, Nokia Shanghai Bell | agreed | R4-2016188 | - |
| R4-2017464 | WF on work plan and working split for NR-U BS conformance testing | ZTE | approved | - | - |
| R4-2017465 | Way Forward on NR-U UE demodulation requirements | Qualcomm | revised | - | R4-2017685 |
| R4-2017466 | Way forward on NR-U BS demodulation requirements for general part and PUSCH | Huawei, HiSilicon | revised | - | R4-2017688 |
| R4-2017467 | Way forward on PUCCH demodulation requirements | Ericsson | approved | - | - |
| R4-2017468 | Way forward on PRACH demodulation requirements | Nokia, Nokia Shanghai Bell | approved | - | - |
| R4-2017469 | WF on single link tests for NR V2X demodulation performance | LGE | revised | - | R4-2017687 |
| R4-2017470 | Simulation assumptions for NR V2X single link test case | Huawei | approved | - | - |
| R4-2017471 | WF on multiple link tests for NR V2X demodulation performance | Intel | revised | - | R4-2017686 |
| R4-2017472 | Simulation assumptions for NR V2X multiple link test case | Huawei | approved | - | - |
| R4-2017473 | Correction CR on TR38.809 | Samsung | agreed | R4-2014752 | - |
| R4-2017474 | Draft CR to TS 38.174: maintenance of TS 38.174 References and Definitions | Nokia | endorsed | - | - |
| R4-2017475 | Draft CR to TS 38.174: maintenance of TS 38.174 Symbols and Abbreviations | Huawei | endorsed | - | - |
| R4-2017476 | Draft CR to TS 38.174: Transmitted signal quality maintainance | CATT | endorsed | R4-2014386 | - |
| R4-2017477 | Draft CR to TS 38.809: Transmitted signal quality maintainance | CATT | endorsed | R4-2014387 | - |
| R4-2017478 | CR on Tx signal quality related requirements chapter | Ericsson | endorsed | R4-2016263 | - |
| R4-2017479 | DraftCR to TS 38.174: Sensitivity corrections | Nokia, Nokia Shanghai Bell | endorsed | R4-2015436 | - |
| R4-2017480 | DraftCR to TS 38.174: In-band selectivity corrections | Nokia, Nokia Shanghai Bell | endorsed | R4-2015437 | - |
| R4-2017481 | CR on Inband selectivity and blocking requirements | Ericsson | endorsed | R4-2016252 | - |
| R4-2017482 | CR on Tx Power related requirements | Ericsson | endorsed | R4-2016257 | - |
| R4-2017483 | CR on unwanted emission requirements | ZTE | endorsed | - | - |
| R4-2017484 | DraftCR to TS 38.174: OOB blocking and Rx spurious corrections | Nokia, Nokia Shanghai Bell | endorsed | R4-2015438 | - |
| R4-2017485 | CR on Rx Charateristic other related requirements | Ericsson | endorsed | R4-2016253 | - |
| R4-2017486 | CR on Tx characteristic other requirements | Ericsson | endorsed | R4-2016256 | - |
| R4-2017487 | WF on IAB conformance work plan and specifications | Qualcomm | approved | - | - |
| R4-2017488 | WF and test setup and test environments | Nokia, Nokia Shanghai Bell | revised | - | R4-2017671 |
| R4-2017489 | WF on manufacturer declarations, test models and configurations including Rx FRC | Ericsson | revised | - | R4-2017672 |
| R4-2017490 | WF on dynamic range, power control (LA) and frequency error for IAB-MT | CATT | approved | - | - |
| R4-2017491 | WF on detail aspects on IAB conformance testing | Nokia | agreed | - | - |
| R4-2017492 | WF on Rel-16 NR IAB demodulation requirements | Nokia, Nokia Shanghai Bell | revised | - | R4-2017673 |
| R4-2017493 | Way forward on UE demodulation and CSI reporting requirements for MR-DC and CA enhancements | Ericsson | approved | - | - |
| R4-2017494 | WF on power saving demodulation | CMCC | revised | - | R4-2017677 |
| R4-2017495 | Summary of ideal and impairment results for ultra-low BLER UE | Ericsson | noted | R4-2015862 | - |
| R4-2017496 | CR on FRC for UE Ultra-low BLER requirements | Intel Corporation | withdrawn | - | - |
| R4-2017497 | CR to TS 38.101-4: Performance requirements for URLLC PDSCH 0.001% BLER | Ericsson | agreed | R4-2016107 | - |
| R4-2017498 | CR to TS 38.101-4: Applicability rules for URLLC CSI requirements | Huawei, HiSilicon | postponed | R4-2015621 | - |
| R4-2017499 | Draft CR on CQI reporting requirements with Table 3 | Apple | postponed | R4-2016375 | - |
| R4-2017500 | Summary of ideal and impairment results for ultra-low BLER BS | Ericsson | noted | R4-2015861 | - |
| R4-2017501 | Test requirements for 0.001% BLER | Ericsson | agreed | R4-2015024 | - |
| R4-2017502 | Introduction of URLLC 0.001% BLER requirement | Ericsson | agreed | R4-2015025 | - |
| R4-2017503 | CR for 38.104: Ultra high reliability BS demodulation requirements | Nokia, Nokia Shanghai Bell | agreed | R4-2015096 | - |
| R4-2017504 | CR for 38.141-1: URLLC testing methodology appendix | Nokia, Nokia Shanghai Bell, Intel, Ericsson, Huawei, HiSilicon | agreed | R4-2015098 | - |
| R4-2017505 | CR for 38.141-2: URLLC testing methodology appendix | Nokia, Nokia Shanghai Bell, Intel, Ericsson, Huawei, HiSilicon | agreed | R4-2015099 | - |
| R4-2017506 | CR to TS 38.141-2: FRC for FR1 URLLC BS performance requirements | Huawei, HiSilicon | agreed | R4-2015627 | - |
| R4-2017507 | WF on ultra-low BLER requirements | Ericsson | revised | - | R4-2017674 |
| R4-2017508 | LS to RAN5 on CQI reporting for URLLC | Qualcomm | withdrawn | - | - |
| R4-2017509 | WF on URLLC UE performance requirements with higher BLER | Intel | approved | - | - |
| R4-2017510 | Simulation assumption for URLLC FR2 UE performance requirements with higher BLER | Intel | approved | - | - |
| R4-2017511 | CR to TS 38.101-4: Addition of UE performance requirements for FR1 URLLC PDSCH repetitions over multiple slots | Huawei, HiSilicon | agreed | R4-2015620 | - |
| R4-2017512 | CR on FRC for UE Higher BLER requirements | Intel Corporation | agreed | R4-2016005 | - |
| R4-2017513 | CR to TS 38.101-4: Performance requirements for URLLC High BLER feature tests | Ericsson | agreed | R4-2016106 | - |
| R4-2017514 | CR on requirements with slot aggregation in FR2 | Apple | agreed | R4-2014243 | - |
| R4-2017515 | CR to TS 38.101-4: Applicability rules for URLLC UE demodulation requirements | Huawei, HiSilicon | agreed | R4-2015622 | - |
| R4-2017516 | CR on FR1 PDSCH Mapping Type B and Processing Capability 2 Requirements | Qualcomm Incorporated | revised | R4-2016504 | R4-2017665 |
| R4-2017517 | CR for TS 38.141-2: Introduction of performance requirements of PUSCH repetition type A and PUSCH mapping type B for URLLC | NTT DOCOMO, INC. | not pursued | R4-2014820 | - |
| R4-2017518 | FRCs for URLLC | Ericsson | agreed | R4-2015023 | - |
| R4-2017519 | Draft CR on PUSCH repetition type A and PUSCH mapping type B radiated performance requirement for TS 38.104 | Samsung | endorsed | R4-2015123 | - |
| R4-2017520 | Draft CR on FRC for URLLC BS radiated performance requirement for TS 38.141-2 | Samsung | endorsed | R4-2015124 | - |
| R4-2017521 | CR to TS 38.141-1: Applicability of URLLC BS demodulation requirements | Huawei, HiSilicon | agreed | R4-2015625 | - |
| R4-2017522 | CR to TS 38.141-2: Addition of BS conformance testing for FR2 URLLC PUSCH repetition Type A | Huawei, HiSilicon, NTT DoCoMo | agreed | R4-2015626 | - |
| R4-2017523 | CR on FR2 requirements for PUSCH mapping Type B with low number of symbols | Intel Corporation, NTT DoCoMo | agreed | R4-2016006 | - |
| R4-2017524 | CR for 38.104: Low latency BS demodulation requirements | Nokia, Nokia Shanghai Bell | agreed | R4-2015097 | - |
| R4-2017525 | WF on URLLC BS performance requirement with higher BLER | Huawei | revised | - | R4-2017675 |
| R4-2017526 | Simulation assumption for URLLC FR2 BS performance requirement with higher BLER | Huawei | approved | - | - |
| R4-2017527 | CR to TS 38.104: Addition of BS performance requirements for URLLC PUSCH repetition Type A | Huawei, HiSilicon | agreed | R4-2015623 | - |
| R4-2017528 | CR to TS 38.141-1: Addition of BS conformance testing for URLLC demodulation requirements with higher BLER | Huawei, HiSilicon | agreed | R4-2015624 | - |
| R4-2017529 | WF for NR eMIMO PDSCH requirement | Intel | approved | - | - |
| R4-2017530 | Simulation assumption for PDSCH requirement with single-DCI and Multi-DCI transmission schemes | Ericsson, Intel | approved | - | - |
| R4-2017531 | Way forward on PMI reporting requirement for NR eMIMO | Ericsson, Samsung | revised | - | R4-2017678 |
| R4-2017532 | DraftCR for 38.101-4: Introduction of PDSCH requirement with Single-DCI based SDM scheme | Huawei, HiSilicon | endorsed | R4-2015653 | - |
| R4-2017533 | DraftCR for 38.101-4: Introduction of PDSCH requirement with Multi-DCI based transmission scheme | Huawei, HiSilicon | endorsed | R4-2015654 | - |
| R4-2017534 | CR to TS 38.101-4: Performance requirements single-DCI based multi-TRP Repetition Tx schemes | Intel Corporation | endorsed | R4-2014559 | - |
| R4-2017535 | Draft CR for introduction of Rel-15 Type II PMI test cases | Samsung | endorsed | R4-2014747 | - |
| R4-2017536 | WF on UE demodulation and CSI reporting requirements for FR2 DL 256QAM | China Telecomm | approved | - | - |
| R4-2017537 | CR to demodulation performance requirements | ZTE Corporation | endorsed | R4-2015021 | - |
| R4-2017538 | CR on SDR requirements for DL 256QAM for FR2 | Huawei, HiSilicon | endorsed | R4-2015598 | - |
| R4-2017539 | CR to TS 38.101-4: Propagation conditions for HST scenarios | Intel Corporation | agreed | R4-2014563 | - |
| R4-2017540 | CR on HST DPS requirements | Huawei, HiSilicon | agreed | R4-2015603 | - |
| R4-2017541 | CR on HST-SFN requirements for TDD | CMCC | agreed | R4-2014690 | - |
| R4-2017542 | CR to TS 38.101-4: HST-SFN FDD performance requirements | Intel Corporation | agreed | R4-2014562 | - |
| R4-2017543 | CR on release independent for Rel.16 NR HST UE demodulation requirements | CMCC | agreed | R4-2014696 | - |
| R4-2017544 | CR on release independent for Rel.16 NR HST UE demodulation requirements | CMCC | agreed | R4-2014698 | - |
| R4-2017545 | CR on HST single-tap and HST multi-path fading requirements | Huawei, HiSilicon | agreed | R4-2015606 | - |
| R4-2017546 | CR to TS38.101-4: Addition of Rel-16 HST FRCs | Ericsson | agreed | R4-2016108 | - |
| R4-2017547 | CR on FDD HST Single-Tap and Multipath Fading Requirements | Qualcomm Incorporated | revised | R4-2016500 | R4-2017682 |
| R4-2017548 | CR on applicability rules for HST scenarios | Huawei, HiSilicon | agreed | R4-2015607 | - |
| R4-2017549 | WF on NR HST UE demodulation | CMCC | approved | - | - |
| R4-2017550 | WF on Rel-16 NR HST BS demodulation requirements | Nokia | revised | - | R4-2017676 |
| R4-2017551 | CR for TS 38.141-1: Updates of NR PUSCH performance requirements for Multi-path fading channel models under high Doppler values and applicability rules. | NTT DOCOMO, INC. | agreed | R4-2014822 | - |
| R4-2017552 | CR for 38.104: HST PUSCH demodulation requirements | Nokia, Nokia Shanghai Bell | agreed | R4-2015091 | - |
| R4-2017553 | Additional test cases and FRC tables for HST PUSCH | Ericsson | agreed | R4-2015846 | - |
| R4-2017554 | CR for 38.104: Introduction of performance requirements for NR HST PRACH under fading channel | Huawei, HiSilicon | agreed | R4-2015664 | - |
| R4-2017555 | CR for 38.141-1 Introduction of conformance testing for NR HST PRACH under fading channel | Huawei, HiSilicon | agreed | R4-2016596 | - |
| R4-2017556 | CR for 38.141-2 Introduction of conformance testing for NR HST PRACH under fading channel | Huawei, HiSilicon | agreed | R4-2016597 | - |
| R4-2017557 | Summary of ideal and impairment results for NR HST demodulation requirements | CATT | noted | R4-2014397 | - |
| R4-2017558 | CR for 38.141-2: Introduction of NR PUSCH UL timing adjustment performance requirement for scenario X | CATT | agreed | R4-2014427 | - |
| R4-2017559 | CR on UL timing adjustment conducted performance requirement for TS 38.141-1 | Samsung | agreed | R4-2015121 | - |
| R4-2017560 | Way forward on release independent aspect for UE demodulation and CSI reporting requirements | Huawei, HiSilicon | approved | - | - |
| R4-2017561 | Way forward on PDSCH CA normal demodulation requirements | Intel | approved | - | - |
| R4-2017562 | Way forward on PMI reporting requirements for Tx ports larger than 8 and up to 32 | Ericsson, Samsung | revised | - | R4-2017681 |
| R4-2017563 | Simulation assumptions for NR PMI reporting requirements for more than 8 Tx ports | Ericsson | approved | - | - |
| R4-2017564 | Draft CR for TS 38.307 on UE demodulation performance requirements (Rel-15) | China Telecom | endorsed | R4-2014501 | - |
| R4-2017565 | Draft CR for TS 38.307 on UE demodulation performance requirements (Rel-16) | China Telecom | endorsed | R4-2014502 | - |
| R4-2017566 | CR on Applicability rules for Normal NR CA demodulation requirements | Intel Corporation | agreed | R4-2016003 | - |
| R4-2017567 | Introduction of NR PDSCH FR1 CA 2Rx performance requirements | CMCC | agreed | R4-2014729 | - |
| R4-2017568 | CR: Introduction of performance requirements for NR FR1 PDSCH CA with 4Rx | Huawei, HiSilicon | agreed | R4-2015656 | - |
| R4-2017569 | Draft CR for introduction of Rel-15 Type II PMI test cases | Samsung | endorsed | R4-2014748 | - |
| R4-2017570 | Way forward on UE power imbalance requirements for FR1 CA and EN-DC | NTT DoCoMo | approved | - | - |
| R4-2017571 | CR: FR1 EN-DC power imbalance requirements | NTT DOCOMO, INC, SoftBank Corp. | agreed | R4-2015318 | - |
| R4-2017572 | CR: Addition of power imbalance requirements for intra-band contiguous CA and intra-band EN-DC | Huawei, HiSilicon | agreed | R4-2015661 | - |
| R4-2017573 | Way forward on CA CQI reporting requirements | China Telecomm | approved | - | - |
| R4-2017574 | Adding FRC table description in Annex in TS38.104 v16.5.0 | Ericsson | agreed | R4-2015845 | - |
| R4-2017575 | CR to TR 37.941: overall TR cleanup, Rel-15 | Huawei | revised | R4-2015960 | R4-2017683 |
| R4-2017576 | CR to TR 37.941: Corrections to TRP measurement procedures | Nokia, Nokia Shanghai Bell | agreed | R4-2016290 | - |
| R4-2017577 | CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | agreed | R4-2016466 | - |
| R4-2017578 | CR to TR 37.941: alignments and corrections to the MU contributors and MU derivations, Rel-15 | Huawei | revised | R4-2015964 | R4-2017684 |
| R4-2017579 | CR to TR 37.941: MU and TT values alignments and corrections, Rel-15 | Huawei | agreed | R4-2015962 | - |
| R4-2017580 | Way forward on BS performance requirements for 2-step RACH | ZTE | approved | - | - |
| R4-2017581 | Addition of Time Domain Alternative for Spatial Correlation Validation | Spirent Communications | revised | R4-2014289 | R4-2017658 |
| R4-2017582 | Number of Slots for NR MIMO OTA testing | vivo, CAICT | agreed | R4-2016228 | - |
| R4-2017583 | LS on FR1 MIMO OTA | RAN4 | approved | R4-2016217 | - |
| R4-2017584 | TP to TS 38.151 v0.0.1 on FR1 Channel model and RMC | vivo, CAICT, Spirent | approved | R4-2016221 | - |
| R4-2017585 | WF on NR MIMO OTA | vivo, CAICT | approved | - | - |
| R4-2017586 | WF on AAS co-location for adjacent bands | Huawei | agreed | - | - |
| R4-2017587 | CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics | Ericsson | withdrawn | - | - |
| R4-2017588 | CR to TS 37.145-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | withdrawn | - | - |
| R4-2017589 | CR to TS 37.145-1: correction of manufacturer | Huawei | agreed | R4-2015949 | - |
| R4-2017590 | CR to TS 37.145-1: Corrections to conformance requirements, Rel-15 | Huawei | agreed | R4-2016073 | - |
| R4-2017591 | CR to TS 37.105: Corrections to core requirements including UEM additional requirements, Rel-15 | Huawei | agreed | R4-2016077 | - |
| R4-2017592 | CR to 38.141-2: Annex C correction on frequency range of FR2 TT table (C.2) | Keysight Technologies UK Ltd | agreed | R4-2016152 | - |
| R4-2017593 | WF on remaining open issues with the test methodology for high DL power and low UL power test cases | Apple | approved | - | - |
| R4-2017594 | WF on solutions to minimize the impact of polarization basis mismatch between the TE and DUT on the RF testing | Samsung | revised | - | R4-2017689 |
| R4-2017595 | WF on testability enhancements to support the verification of RF requirements for inter-band (FR2+FR2) CA | Anritsu | approved | - | - |
| R4-2017596 | WF on extreme temperature conditions for all applicable FR2 UE RF test cases | vivo | approved | - | - |
| R4-2017597 | WF on testability enhancements to reduce test time | vivo | approved | - | - |
| R4-2017598 | TP to TR38.884 on High DL and Low UL power test cases | Apple Inc., Keysight Technologies, Rohde & Schwarz, MVG Industries | approved | R4-2014919 | - |
| R4-2017599 | WF on testability aspects for the introduction of the new band n262 | Apple | approved | - | - |
| R4-2017600 | WF on NTN solutions | THALES | approved | - | - |
| R4-2017601 | Draft CR for eMIMO demod requirements - General and Applicability rule | Apple | endorsed | R4-2014248 | - |
| R4-2017602 | Email discussion summary for [97e][302] NR\_BSRF\_Maintenance | Moderator (Ericsson) | noted | R4-2017400 | - |
| R4-2017603 | Email discussion summary for [97e][303] NR\_Conformance\_Maintenance | Moderator (Huawei) | revised | R4-2017401 | R4-2017697 |
| R4-2017604 | Email discussion summary for [97e][304] NR\_EMC | Moderator (ZTE) | noted | R4-2017402 | - |
| R4-2017605 | Email discussion summary for [97e][314] NR\_Demod\_Maintenance | Moderator (Intel) | noted | R4-2017412 | - |
| R4-2017606 | Email discussion summary for [97e][301] LTE\_BSRF\_Maintenance | Moderator (Ericsson) | noted | R4-2017399 | - |
| R4-2017607 | Email discussion summary for [97e][313] LTE\_Demod\_Maintenance | Moderator (Huawei) | noted | R4-2017411 | - |
| R4-2017608 | Email discussion summary for [97e][305] NR\_unlic\_RF\_BS | Moderator (Nokia) | noted | R4-2017403 | - |
| R4-2017609 | Email discussion summary for [97e][306] NR\_unlic\_RF\_Conformance | Moderator (ZTE) | noted | R4-2017404 | - |
| R4-2017610 | Email discussion summary for [97e][315] NR\_unlic\_Demod\_UE | Moderator (Qualcomm) | noted | R4-2017413 | - |
| R4-2017611 | Email discussion summary for [97e][316] NR\_unlic\_Demod\_BS | Moderator (Huawei) | noted | R4-2017414 | - |
| R4-2017612 | Email discussion summary for [97e][317] V2X\_Demod\_Part1 | Moderator (LGE) | noted | R4-2017415 | - |
| R4-2017613 | Email discussion summary for [97e][318] V2X\_Demod\_Part2 | Moderator (Intel) | noted | R4-2017416 | - |
| R4-2017614 | Email discussion summary for [97e][307] NR\_IAB\_General | Moderator (CATT) | noted | R4-2017405 | - |
| R4-2017615 | Email discussion summary for [97e][308] NR\_IAB\_RF\_Maintenance | Moderator (Qualcomm) | noted | R4-2017406 | - |
| R4-2017616 | Email discussion summary for [97e][309] NR\_IAB\_Conformance\_Part1 | Moderator (Nokia) | noted | R4-2017407 | - |
| R4-2017617 | Email discussion summary for [97e][310] NR\_IAB\_Conformance\_Part2 | Moderator (Samsung) | noted | R4-2017408 | - |
| R4-2017618 | Email discussion summary for [97e][319] NR\_IAB\_Demod | Moderator (Nokia) | noted | R4-2017417 | - |
| R4-2017619 | Email discussion summary for [97e][321] NR\_UE\_pow\_sav\_Demod | Moderator (CATT) | noted | R4-2017419 | - |
| R4-2017620 | Email discussion summary for [97e][322] NR\_URLLC\_Demod\_Part1 | Moderator (Ericsson) | noted | R4-2017420 | - |
| R4-2017621 | Email discussion summary for [97e][323] NR\_URLLC\_Demod\_Part2 | Moderator (Huawei) | noted | R4-2017421 | - |
| R4-2017622 | Email discussion summary for [97e][324] NR\_eMIMO\_Demod | Moderator (Samsung) | noted | R4-2017422 | - |
| R4-2017623 | Email discussion summary for [97e][325] NR\_DL256QAM\_FR2\_Demod | Moderator (China Telecomm) | noted | R4-2017423 | - |
| R4-2017624 | Email discussion summary for [97e][326] NR\_HST\_Demod\_UE | Moderator (CMCC) | noted | R4-2017460 | - |
| R4-2017625 | Email discussion summary for [97e][327] NR\_HST\_Demod\_BS | Moderator (Nokia) | noted | R4-2017425 | - |
| R4-2017626 | Email discussion summary for [97e][328] NR\_perf\_enh\_Demod | Moderator (China Telecomm) | noted | R4-2017426 | - |
| R4-2017627 | Email discussion summary for [97e][311] OTA\_BS\_Testing | Moderator (Huawei) | noted | R4-2017409 | - |
| R4-2017628 | Email discussion summary for [97e][329] NR\_2step\_RACH\_Demod | Moderator (ZTE) | noted | R4-2017427 | - |
| R4-2017629 | Email discussion summary for [97e][330] NR\_MIMO\_OTA | Moderator (CAICT) | noted | R4-2017428 | - |
| R4-2017630 | Email discussion summary for [97e][312] NTN\_Solutions | Moderator (THALES) | noted | R4-2017410 | - |
| R4-2017631 | Email discussion summary for [97e][331] FR2\_enhTestMethods | Moderator (Apple) | noted | R4-2017429 | - |
| R4-2017632 | WF on FR2 MIMO OTA simulation assumption | Huawei | approved | - | - |
| R4-2017633 | CR to TS 38.141-2: BS demodulation requirements for 2-step RACH (Annex) | Intel Corporation | agreed | R4-2014561 | - |
| R4-2017634 | Draft CR on MsgA PUSCH radiated performance requirement for TS 38.141-2 | Samsung | withdrawn | - | - |
| R4-2017635 | CR to TS 38.104 BS demodulation requirements for 2-step RACH | ZTE Wistron Telecom AB | revised | R4-2015177 | R4-2017666 |
| R4-2017636 | CR on BS demodulation requirements for 2-step RACH for FR2 | Huawei, HiSilicon | agreed | R4-2015612 | - |
| R4-2017637 | Introduction of 2-step RACH FRC tables in 38.141-1 | Nokia, Nokia Shanghai Bell | agreed | R4-2014939 | - |
| R4-2017638 | Introduction of test procedure and requirement for 2-step RACH | Ericsson | withdrawn | - | - |
| R4-2017639 | TP to 38.827 on channel model rotations | Huawei, HiSilicon | withdrawn | - | - |
| R4-2017640 | CR to 38.827 on base station beamforming configuration | Huawei, HiSilicon | withdrawn | - | - |
| R4-2017641 | CR for 38.827 on corrections | Huawei, HiSilicon | agreed | R4-2016586 | - |
| R4-2017642 | Draft CR to TS 38.174: maintenance of TS 38.174 clause 4 | Ericsson | endorsed | - | - |
| R4-2017643 | Draft CR to TS 38.174: add new sub-clauses to TS 38.174 clause 4 | ZTE | endorsed | - | - |
| R4-2017644 | Draft CR to TS 38.174: maintenance of TS 38.174 clause 5 | CATT | endorsed | - | - |
| R4-2017645 | CR: Updates to LTE V2X performance requirements | Huawei, HiSilicon | withdrawn | - | - |
| R4-2017646 | CR: Updates to LTE V2X performance requirements | Huawei, HiSilicon | withdrawn | - | - |
| R4-2017647 | Summary of ideal and impairment results for NR HST demodulation requirements | Huawei, HiSilicon | noted | R4-2015602 | - |
| R4-2017648 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017649 | CR to TS 37.145-2: correction of manufacturer | Huawei | agreed | R4-2015953 | - |
| R4-2017650 | Draft CR: PDSCH FRC for eMIMO sDCI/mDCI-based SDM transmission | Ericsson | postponed | R4-2015830 | - |
| R4-2017651 | draftCR to TS 38.174: Section 10.2 OTA sensitivity | Huawei | endorsed | - | - |
| R4-2017652 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017653 | CR on MsgA PUSCH radiated performance requirement for TS 38.141-2 | Samsung | agreed | - | - |
| R4-2017654 | CR to 38.141-1 Introduction of test procedure and requirements for 2-step RACH | Ericsson | revised | - | R4-2017667 |
| R4-2017655 | CR to 38.141-2: Annex C correction on frequency range of FR2 TT table (C.2) | Keysight Technologies UK Ltd | agreed | - | - |
| R4-2017656 | CR: Updates to LTE V2X performance requirements | Huawei, HiSilicon | agreed | - | - |
| R4-2017657 | CR: Updates to LTE V2X performance requirements | Huawei, HiSilicon | agreed | - | - |
| R4-2017658 | Addition of Time Domain Alternative for Spatial Correlation Validation | Spirent Communications | agreed | R4-2017581 | - |
| R4-2017659 | Work plan for power saving demodulation | CATT | approved | R4-2014454 | - |
| R4-2017660 | CR to TS 38.101-4: on gamma values for SP Type I PMI requirements | Ericsson | agreed | - | - |
| R4-2017661 | NR\_NTN\_solutions work plan | THALES | approved | R4-2014381 | - |
| R4-2017662 | CR to TS 37.145-2: Corrections to conformance requirements including UEM additional requirements, Rel-15 | Huawei | agreed | R4-2016075 | - |
| R4-2017663 | Draft TR38.884 Study on enhanced test methods for FR2 NR UEs v0.1.0 | Apple, vivo | agreed | - | - |
| R4-2017664 | Correction CR on TS38.174 | Qualcomm | agreed | - | - |
| R4-2017665 | CR on FR1 PDSCH Mapping Type B and Processing Capability 2 Requirements | Qualcomm Incorporated | agreed | R4-2017516 | - |
| R4-2017666 | CR to TS 38.104 BS demodulation requirements for 2-step RACH | ZTE Wistron Telecom AB | agreed | R4-2017635 | - |
| R4-2017667 | CR to 38.141-1 Introduction of test procedure and requirements for 2-step RACH | Ericsson | agreed | R4-2017654 | - |
| R4-2017668 | CR to TS 37.105: addition of the OBUE applicability table, Rel-16 | Huawei | agreed | - | - |
| R4-2017669 | CR to TS 37.145-1: addition of the OBUE applicability table, Rel-16 | Huawei | agreed | - | - |
| R4-2017670 | CR to TS 37.145-2: addition of the OBUE applicability table, Rel-16 | Huawei | agreed | - | - |
| R4-2017671 | WF and test setup and test environments | Nokia, Nokia Shanghai Bell | approved | R4-2017488 | - |
| R4-2017672 | WF on manufacturer declarations, test models and configurations including Rx FRC | Ericsson | approved | R4-2017489 | - |
| R4-2017673 | WF on Rel-16 NR IAB demodulation requirements | Nokia, Nokia Shanghai Bell | approved | R4-2017492 | - |
| R4-2017674 | WF on ultra-low BLER requirements | Ericsson | agreed | R4-2017507 | - |
| R4-2017675 | WF on URLLC BS performance requirement with higher BLER | Huawei | approved | R4-2017525 | - |
| R4-2017676 | WF on Rel-16 NR HST BS demodulation requirements | Nokia | approved | R4-2017550 | - |
| R4-2017677 | WF on power saving demodulation | CMCC | approved | R4-2017494 | - |
| R4-2017678 | Way forward on PMI reporting requirement for NR eMIMO | Ericsson, Samsung | approved | R4-2017531 | - |
| R4-2017679 | (reserved) | BS RF Session | not concluded | - | - |
| R4-2017680 | CR for 36.101: Cleanup for performance requirements of sTTI (Rel-16) | Huawei, HiSilicon | agreed | R4-2017456 | - |
| R4-2017681 | Way forward on PMI reporting requirements for Tx ports larger than 8 and up to 32 | Ericsson, Samsung | approved | R4-2017562 | - |
| R4-2017682 | CR on FDD HST Single-Tap and Multipath Fading Requirements | Qualcomm Incorporated | agreed | R4-2017547 | - |
| R4-2017683 | CR to TR 37.941: overall TR cleanup, Rel-15 | Huawei | agreed | R4-2017575 | - |
| R4-2017684 | CR to TR 37.941: alignments and corrections to the MU contributors and MU derivations, Rel-15 | Huawei | agreed | R4-2017578 | - |
| R4-2017685 | Way Forward on NR-U UE demodulation requirements | Qualcomm | approved | R4-2017465 | - |
| R4-2017686 | WF on multiple link tests for NR V2X demodulation performance | Intel | approved | R4-2017471 | - |
| R4-2017687 | WF on single link tests for NR V2X demodulation performance | LGE | approved | R4-2017469 | - |
| R4-2017688 | Way forward on NR-U BS demodulation requirements for general part and PUSCH | Huawei, HiSilicon | approved | R4-2017466 | - |
| R4-2017689 | WF on solutions to minimize the impact of polarization basis mismatch between the TE and DUT on the RF testing | Samsung | approved | R4-2017594 | - |
| R4-2017690 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017691 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017692 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017693 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017694 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017695 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017696 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017697 | Email discussion summary for [97e][303] NR\_Conformance\_Maintenance | Moderator (Huawei) | noted | R4-2017603 | - |
| R4-2017698 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017699 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017700 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017701 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017702 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017703 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017704 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017705 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017706 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017707 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017708 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017709 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017710 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017711 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017712 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017713 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017714 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017715 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017716 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017717 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017718 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017719 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017720 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017721 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017722 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017723 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017724 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017725 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017726 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017727 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017728 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017729 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017730 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017731 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017732 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017733 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017734 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017735 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017736 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017737 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017738 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017739 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017740 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017741 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017742 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017743 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017744 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017745 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017746 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017747 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017748 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017749 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017750 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017751 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017752 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017753 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017754 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017755 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017756 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017757 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017758 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017759 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017760 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017761 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017762 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017763 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017764 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017765 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017766 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017767 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017768 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017769 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017770 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017771 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017772 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017773 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017774 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017775 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017776 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017777 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017778 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017779 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017780 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017781 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017782 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017783 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017784 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017785 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017786 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017787 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017788 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017789 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017790 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017791 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017792 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017793 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017794 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017795 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017796 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017797 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017798 | (reserved) | BS RF Session | reserved | - | - |
| R4-2017799 | REPLY LIAISON STATEMENT TO 3GPP RAN4 | ITU-R Working Party (WP) 5D | noted | - | - |
| R4-2017800 | LS to 3GPP RAN WG4 on Release 15 of the IMT harmonised standard | MSG TFES | noted | - | - |
| R4-2017801 | Reply LS on UE capability on wideband carrier operation for NR-U | RAN1 | noted | - | - |
| R4-2017802 | Reply LS on number of configurable CSI-RS resources per MO | RAN1 | noted | - | - |
| R4-2017803 | LS on Rel-16 mandatory RRM requirements | RAN4 | approved | - | - |
| R4-2017804 | CR CatF n7 NS\_46 AMPR and coexistence | Qualcomm Incorporated | agreed | R4-2014167 | - |
| R4-2017805 | CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-1 | ZTE | agreed | - | - |
| R4-2017806 | CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-3 | ZTE | not concluded | - | - |
| R4-2017807 | CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-1 | ZTE | agreed | - | - |
| R4-2017808 | CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-3 | ZTE | agreed | - | - |
| R4-2017809 | CR to reflect the completed DC combinations for 3 bands DL with 3 bands UL into TS 38.101-3 | ZTE | agreed | - | - |
| R4-2017810 | CR to reflect the completed Dual Connectivity (DC) of x bands (x=1,2,3) LTE inter-band CA (xDL1UL) and 3 bands NR inter-band CA (3DL1UL) | ZTE | agreed | - | - |
| R4-2017811 | LS on Rel-16 RAN4 Clarification for UE Antenna Connector Interpretation | RAN4 | approved | - | - |
| R4-2017812 | Email discussion summary for [97e][140] FS\_NR\_52\_to\_71GHz\_Part\_1 | Moderator (Qualcomm) | noted | R4-2016981 | - |
| R4-2017813 | WF on inter-band CA and UE BM type | Qualcomm | approved | R4-2016918 | - |
| R4-2017814 | LS to RAN2 on 35 and 45 MHz channel bandwidths | T-Mobile USA | revised | - | R4-2017846 |
| R4-2017815 | WF on RF requirements for Rel-17 Tx switching enhancement | China Telecom | approved | R4-2016914 | - |
| R4-2017816 | CR for TS 38.101-3: correction of spurious emission band UE co-existence (R16) | Huawei, HiSilicon | agreed | R4-2016497 | - |
| R4-2017817 | TP to TR38.921: uplink ACIR model | ZTE Corporation | approved | R4-2016136 | - |
| R4-2017818 | Correction on Additional ILs and MSD levels for DC\_20\_n38 UE | LG Electronics France, Huawei | agreed | R4-2014318 | - |
| R4-2017819 | New WID: Introduction of BCS4 | T-Mobile USA | not treated | - | - |
| R4-2017820 | Motivation for BCS4 | T-Mobile USA | not treated | - | - |
| R4-2017821 | CR to TS 38.101-3 clarifications on indication of Single Uplink allowed for intra-band EN-DC and NE-DC | CHTTL | withdrawn | R4-2015992 | - |
| R4-2017822 | CR for 38.101-1 NR V2X FRC | Huawei, HiSilicon | agreed | R4-2016474 | - |
| R4-2017823 | CR to DMRS position in UL RMC for FR2 | Qualcomm Incorporated | agreed | - | - |
| R4-2017824 | A-MPR definition for CA\_n7B, CA\_n48B, CA\_n41B and CA\_n41C | Nokia | agreed | R4-2016814 | - |
| R4-2017825 | Correction to the intra-cell guard band definition for wideband operation | Ericsson | revised | R4-2016797 | R4-2017845 |
| R4-2017826 | CR to TS38.101-3[R16] Applicability of 2Rx requirements | vivo | agreed | R4-2016226 | - |
| R4-2017827 | WF on RF requirements for PC2 intra-band contiguous UL CA | Huawei | approved | R4-2016911 | - |
| R4-2017828 | WF on NR support for HST in FR2 | Samsung | approved | R4-2016921 | - |
| R4-2017829 | TP for TR 37.875: adding some UE RF study for NR V2X band combinations | Huawei, HiSilicon | approved | R4-2016870 | - |
| R4-2017830 | Clarifications and corrections on UE co-ex requirements(R15) | SoftBank Corp. | agreed | R4-2014311 | - |
| R4-2017831 | Clarifications and corrections on UE co-ex requirements(R16) | SoftBank Corp. | agreed | R4-2014312 | - |
| R4-2017832 | WF on Min and Max Channel Bandwidths in 52 to 71 GHz | Huawei | approved | R4-2016925 | - |
| R4-2017833 | WF on Irregular Channel Bandwidths | Ericsson | noted | R4-2016931 | - |
| R4-2017834 | CR for FR2 FWA RF requirements | Huawei | withdrawn | - | - |
| R4-2017835 | WF on NR-U continuation work | Skyworks | approved | - | - |
| R4-2017836 | WF on alternative to creating new BCSs | T-Mobile USA | revised | R4-2016941 | R4-2017843 |
| R4-2017837 | Removal of square brackets for 38.101-1 NR-U | Qualcomm Incorporated | agreed | R4-2016799 | - |
| R4-2017838 | TR skeleton for NR support for high speed train scenario in FR2 | Nokia, Nokia Shanghai Bell, Samsung | approved | R4-2016922 | - |
| R4-2017839 | LS on SL switching priority | RAN4 | approved | R4-2016807 | - |
| R4-2017840 | TR Skeleton for TR 37.826 v0.1.0 ENDC\_UE\_PC2\_R17\_NR\_TDD | China Unicom | agreed | - | - |
| R4-2017841 | Revised WID on High power UE (power class 2) for EN-DC with 1 LTE band + 1 NR TDD band | China Unicom | endorsed | - | - |
| R4-2017842 | Email discussion summary for [97e][133] NR\_RF\_FR1\_enh\_Part\_1 | Moderator (Huawei) | noted | R4-2016974 | - |
| R4-2017843 | WF on alternative to creating new BCSs | T-Mobile USA | approved | R4-2017836 | - |
| R4-2017844 | Reply LS on cell-grouping UE capability for synchronous NR-DC | Apple | revised | R4-2016812 | R4-2017847 |
| R4-2017845 | Correction to the intra-cell guard band definition for wideband operation | Ericsson | agreed | R4-2017825 | - |
| R4-2017846 | LS to RAN2 on 35 and 45 MHz channel bandwidths | RAN4 | approved | R4-2017814 | - |
| R4-2017847 | Reply LS on cell-grouping UE capability for synchronous NR-DC | RAN4 | approved | R4-2017844 | - |
| R4-2017848 | (reserved) | Main session | reserved | - | - |
| R4-2017849 | (reserved) | Main session | reserved | - | - |
| R4-2017850 | (reserved) | Main session | reserved | - | - |
| R4-2017851 | (reserved) | Main session | reserved | - | - |
| R4-2017852 | (reserved) | Main session | reserved | - | - |
| R4-2017853 | (reserved) | Main session | reserved | - | - |
| R4-2017854 | (reserved) | Main session | reserved | - | - |
| R4-2017855 | (reserved) | Main session | reserved | - | - |
| R4-2017856 | (reserved) | Main session | reserved | - | - |
| R4-2017857 | (reserved) | Main session | reserved | - | - |
| R4-2017858 | (reserved) | Main session | reserved | - | - |
| R4-2017859 | (reserved) | Main session | reserved | - | - |
| R4-2017860 | (reserved) | Main session | reserved | - | - |
| R4-2017861 | (reserved) | Main session | reserved | - | - |
| R4-2017862 | (reserved) | Main session | reserved | - | - |
| R4-2017863 | (reserved) | Main session | reserved | - | - |
| R4-2017864 | (reserved) | Main session | reserved | - | - |
| R4-2017865 | (reserved) | Main session | reserved | - | - |
| R4-2017866 | (reserved) | Main session | reserved | - | - |
| R4-2017867 | (reserved) | Main session | reserved | - | - |
| R4-2017868 | (reserved) | Main session | reserved | - | - |
| R4-2017869 | (reserved) | Main session | reserved | - | - |
| R4-2017870 | (reserved) | Main session | reserved | - | - |
| R4-2017871 | (reserved) | Main session | reserved | - | - |
| R4-2017872 | (reserved) | Main session | reserved | - | - |
| R4-2017873 | (reserved) | Main session | reserved | - | - |
| R4-2017874 | (reserved) | Main session | reserved | - | - |
| R4-2017875 | (reserved) | Main session | reserved | - | - |
| R4-2017876 | (reserved) | Main session | reserved | - | - |
| R4-2017877 | (reserved) | Main session | reserved | - | - |
| R4-2017878 | (reserved) | Main session | reserved | - | - |
| R4-2017879 | (reserved) | Main session | reserved | - | - |
| R4-2017880 | (reserved) | Main session | reserved | - | - |
| R4-2017881 | (reserved) | Main session | reserved | - | - |
| R4-2017882 | (reserved) | Main session | reserved | - | - |
| R4-2017883 | (reserved) | Main session | reserved | - | - |
| R4-2017884 | (reserved) | Main session | reserved | - | - |
| R4-2017885 | (reserved) | Main session | reserved | - | - |
| R4-2017886 | (reserved) | Main session | reserved | - | - |
| R4-2017887 | (reserved) | Main session | reserved | - | - |
| R4-2017888 | (reserved) | Main session | reserved | - | - |
| R4-2017889 | (reserved) | Main session | reserved | - | - |
| R4-2017890 | (reserved) | Main session | reserved | - | - |
| R4-2017891 | (reserved) | Main session | reserved | - | - |
| R4-2017892 | (reserved) | Main session | reserved | - | - |
| R4-2017893 | (reserved) | Main session | reserved | - | - |
| R4-2017894 | (reserved) | Main session | reserved | - | - |
| R4-2017895 | (reserved) | Main session | reserved | - | - |
| R4-2017896 | (reserved) | Main session | reserved | - | - |
| R4-2017897 | (reserved) | Main session | reserved | - | - |
| R4-2017898 | (reserved) | Main session | reserved | - | - |
| R4-2017899 | (reserved) | Main session | reserved | - | - |
| R4-2017900 | (reserved) | Main session | reserved | - | - |
| R4-2017901 | (reserved) | Main session | reserved | - | - |
| R4-2017902 | (reserved) | Main session | reserved | - | - |
| R4-2017903 | (reserved) | Main session | reserved | - | - |
| R4-2017904 | (reserved) | Main session | reserved | - | - |
| R4-2017905 | (reserved) | Main session | reserved | - | - |
| R4-2017906 | (reserved) | Main session | reserved | - | - |
| R4-2017907 | (reserved) | Main session | reserved | - | - |
| R4-2017908 | (reserved) | Main session | reserved | - | - |
| R4-2017909 | (reserved) | Main session | reserved | - | - |
| R4-2017910 | (reserved) | Main session | reserved | - | - |
| R4-2017911 | (reserved) | Main session | reserved | - | - |
| R4-2017912 | (reserved) | Main session | reserved | - | - |
| R4-2017913 | (reserved) | Main session | reserved | - | - |
| R4-2017914 | (reserved) | Main session | reserved | - | - |
| R4-2017915 | (reserved) | Main session | reserved | - | - |
| R4-2017916 | (reserved) | Main session | reserved | - | - |
| R4-2017917 | (reserved) | Main session | reserved | - | - |
| R4-2017918 | (reserved) | Main session | reserved | - | - |
| R4-2017919 | (reserved) | Main session | reserved | - | - |
| R4-2017920 | (reserved) | Main session | reserved | - | - |
| R4-2017921 | (reserved) | Main session | reserved | - | - |
| R4-2017922 | (reserved) | Main session | reserved | - | - |
| R4-2017923 | (reserved) | Main session | reserved | - | - |
| R4-2017924 | (reserved) | Main session | reserved | - | - |
| R4-2017925 | (reserved) | Main session | reserved | - | - |
| R4-2017926 | (reserved) | Main session | reserved | - | - |
| R4-2017927 | (reserved) | Main session | reserved | - | - |
| R4-2017928 | (reserved) | Main session | reserved | - | - |
| R4-2017929 | (reserved) | Main session | reserved | - | - |
| R4-2017930 | (reserved) | Main session | reserved | - | - |
| R4-2017931 | (reserved) | Main session | reserved | - | - |
| R4-2017932 | (reserved) | Main session | reserved | - | - |
| R4-2017933 | (reserved) | Main session | reserved | - | - |
| R4-2017934 | (reserved) | Main session | reserved | - | - |
| R4-2017935 | (reserved) | Main session | reserved | - | - |
| R4-2017936 | (reserved) | Main session | reserved | - | - |
| R4-2017937 | (reserved) | Main session | reserved | - | - |
| R4-2017938 | (reserved) | Main session | reserved | - | - |
| R4-2017939 | (reserved) | Main session | reserved | - | - |
| R4-2017940 | (reserved) | Main session | reserved | - | - |
| R4-2017941 | (reserved) | Main session | reserved | - | - |
| R4-2017942 | (reserved) | Main session | reserved | - | - |
| R4-2017943 | (reserved) | Main session | reserved | - | - |
| R4-2017944 | (reserved) | Main session | reserved | - | - |
| R4-2017945 | (reserved) | Main session | reserved | - | - |
| R4-2017946 | (reserved) | Main session | reserved | - | - |
| R4-2017947 | (reserved) | Main session | reserved | - | - |
| R4-2017948 | (reserved) | Main session | reserved | - | - |
| R4-2017949 | (reserved) | Main session | reserved | - | - |
| R4-2017950 | (reserved) | Main session | reserved | - | - |
| R4-2017951 | (reserved) | Main session | reserved | - | - |
| R4-2017952 | (reserved) | Main session | reserved | - | - |
| R4-2017953 | (reserved) | Main session | reserved | - | - |
| R4-2017954 | (reserved) | Main session | reserved | - | - |
| R4-2017955 | (reserved) | Main session | reserved | - | - |
| R4-2017956 | (reserved) | Main session | reserved | - | - |
| R4-2017957 | (reserved) | Main session | reserved | - | - |
| R4-2017958 | (reserved) | Main session | reserved | - | - |
| R4-2017959 | (reserved) | Main session | reserved | - | - |
| R4-2017960 | (reserved) | Main session | reserved | - | - |
| R4-2017961 | (reserved) | Main session | reserved | - | - |
| R4-2017962 | (reserved) | Main session | reserved | - | - |
| R4-2017963 | (reserved) | Main session | reserved | - | - |
| R4-2017964 | (reserved) | Main session | reserved | - | - |
| R4-2017965 | (reserved) | Main session | reserved | - | - |
| R4-2017966 | (reserved) | Main session | reserved | - | - |
| R4-2017967 | (reserved) | Main session | reserved | - | - |
| R4-2017968 | (reserved) | Main session | reserved | - | - |
| R4-2017969 | (reserved) | Main session | reserved | - | - |
| R4-2017970 | (reserved) | Main session | reserved | - | - |
| R4-2017971 | (reserved) | Main session | reserved | - | - |
| R4-2017972 | (reserved) | Main session | reserved | - | - |
| R4-2017973 | (reserved) | Main session | reserved | - | - |
| R4-2017974 | (reserved) | Main session | reserved | - | - |
| R4-2017975 | (reserved) | Main session | reserved | - | - |
| R4-2017976 | (reserved) | Main session | reserved | - | - |
| R4-2017977 | (reserved) | Main session | reserved | - | - |
| R4-2017978 | (reserved) | Main session | reserved | - | - |
| R4-2017979 | (reserved) | Main session | reserved | - | - |
| R4-2017980 | (reserved) | Main session | reserved | - | - |
| R4-2017981 | (reserved) | Main session | reserved | - | - |
| R4-2017982 | (reserved) | Main session | reserved | - | - |
| R4-2017983 | (reserved) | Main session | reserved | - | - |
| R4-2017984 | (reserved) | Main session | reserved | - | - |
| R4-2017985 | (reserved) | Main session | reserved | - | - |
| R4-2017986 | (reserved) | Main session | reserved | - | - |
| R4-2017987 | (reserved) | Main session | reserved | - | - |
| R4-2017988 | (reserved) | Main session | reserved | - | - |
| R4-2017989 | (reserved) | Main session | reserved | - | - |
| R4-2017990 | (reserved) | Main session | reserved | - | - |
| R4-2017991 | (reserved) | Main session | reserved | - | - |
| R4-2017992 | (reserved) | Main session | reserved | - | - |
| R4-2017993 | (reserved) | Main session | reserved | - | - |
| R4-2017994 | (reserved) | Main session | reserved | - | - |
| R4-2017995 | (reserved) | Main session | reserved | - | - |
| R4-2017996 | (reserved) | Main session | reserved | - | - |
| R4-2017997 | (reserved) | Main session | reserved | - | - |
| R4-2017998 | (reserved) | Main session | reserved | - | - |
| R4-2017999 | (reserved) | Main session | reserved | - | - |
| R4-2018000 | (reserved) | Main session | reserved | - | - |
| R4-2018001 | (reserved) | Main session | reserved | - | - |
| R4-2018002 | Reply LS on updated Rel-16 LTE parameter lists | RAN2 | noted | - | - |
| R4-2018003 | Reply LS on definition of NR V2X con-current operation | RAN2 | noted | - | - |
| R4-2018004 | Reply LS on FR1 intra-band UL CA UE capability | RAN2 | noted | - | - |
| R4-2018005 | (reserved) | RRM Session | reserved | - | - |
| R4-2018006 | (reserved) | RRM Session | reserved | - | - |
| R4-2018007 | (reserved) | RRM Session | reserved | - | - |
| R4-2018008 | (reserved) | RRM Session | reserved | - | - |
| R4-2018009 | (reserved) | RRM Session | reserved | - | - |
| R4-2018010 | (reserved) | RRM Session | reserved | - | - |
| R4-2018011 | (reserved) | RRM Session | reserved | - | - |
| R4-2018012 | (reserved) | RRM Session | reserved | - | - |
| R4-2018013 | (reserved) | RRM Session | reserved | - | - |
| R4-2018014 | (reserved) | RRM Session | reserved | - | - |
| R4-2018015 | (reserved) | RRM Session | reserved | - | - |
| R4-2018016 | (reserved) | RRM Session | reserved | - | - |
| R4-2018017 | (reserved) | RRM Session | reserved | - | - |
| R4-2018018 | (reserved) | RRM Session | reserved | - | - |
| R4-2018019 | (reserved) | RRM Session | reserved | - | - |
| R4-2018020 | (reserved) | RRM Session | reserved | - | - |
| R4-2018021 | (reserved) | RRM Session | reserved | - | - |
| R4-2018022 | (reserved) | RRM Session | reserved | - | - |
| R4-2018023 | (reserved) | RRM Session | reserved | - | - |
| R4-2018024 | (reserved) | RRM Session | reserved | - | - |
| R4-2018025 | (reserved) | RRM Session | reserved | - | - |
| R4-2018026 | (reserved) | RRM Session | reserved | - | - |
| R4-2018027 | (reserved) | RRM Session | reserved | - | - |
| R4-2018028 | (reserved) | RRM Session | reserved | - | - |
| R4-2018029 | (reserved) | RRM Session | reserved | - | - |
| R4-2018030 | (reserved) | RRM Session | reserved | - | - |
| R4-2018031 | (reserved) | RRM Session | reserved | - | - |
| R4-2018032 | (reserved) | RRM Session | reserved | - | - |
| R4-2018033 | (reserved) | RRM Session | reserved | - | - |
| R4-2018034 | (reserved) | RRM Session | reserved | - | - |
| R4-2018035 | (reserved) | RRM Session | reserved | - | - |
| R4-2018036 | (reserved) | RRM Session | reserved | - | - |
| R4-2018037 | (reserved) | RRM Session | reserved | - | - |
| R4-2018038 | (reserved) | RRM Session | reserved | - | - |
| R4-2018039 | (reserved) | RRM Session | reserved | - | - |
| R4-2018040 | (reserved) | RRM Session | reserved | - | - |
| R4-2018041 | (reserved) | RRM Session | reserved | - | - |
| R4-2018042 | (reserved) | RRM Session | reserved | - | - |
| R4-2018043 | (reserved) | RRM Session | reserved | - | - |
| R4-2018044 | (reserved) | RRM Session | reserved | - | - |
| R4-2018045 | (reserved) | RRM Session | reserved | - | - |
| R4-2018046 | (reserved) | RRM Session | reserved | - | - |
| R4-2018047 | (reserved) | RRM Session | reserved | - | - |
| R4-2018048 | (reserved) | RRM Session | reserved | - | - |
| R4-2018049 | (reserved) | RRM Session | reserved | - | - |
| R4-2018050 | (reserved) | RRM Session | reserved | - | - |
| R4-2018051 | (reserved) | RRM Session | reserved | - | - |
| R4-2018052 | (reserved) | RRM Session | reserved | - | - |
| R4-2018053 | (reserved) | RRM Session | reserved | - | - |
| R4-2018054 | (reserved) | RRM Session | reserved | - | - |

### A2: Tdoc decision timing

|  |  |  |
| --- | --- | --- |
| Document | Date/time UTC | Decision |
| R4-2014167 | 11/11/2020 09:18:00 | revised |
| R4-2014230 | 09/11/2020 10:17:27 | revised |
| R4-2014288 | 11/11/2020 18:45:53 | revised |
| R4-2014301 | 23/11/2020 09:10:45 | endorsed |
| R4-2014302 | 23/11/2020 09:10:53 | withdrawn |
| R4-2014304 | 23/11/2020 08:53:34 | agreed |
| R4-2014305 | 23/11/2020 08:53:44 | endorsed |
| R4-2014306 | 23/11/2020 08:53:48 | agreed |
| R4-2014313 | 17/11/2020 09:54:30 | withdrawn |
| R4-2014380 | 23/11/2020 08:57:31 | agreed |
| R4-2014381 | 11/11/2020 11:30:06 | revised |
| R4-2014425 | 23/11/2020 09:09:03 | withdrawn |
| R4-2014442 | 10/11/2020 21:02:54 | revised |
| R4-2014454 | 11/11/2020 09:20:45 | revised |
| R4-2014458 | 04/11/2020 16:53:41 | revised |
| R4-2014459 | 04/11/2020 16:54:41 | revised |
| R4-2014460 | 23/11/2020 08:54:27 | agreed |
| R4-2014461 | 23/11/2020 08:54:19 | agreed |
| R4-2014461 | 23/11/2020 08:54:25 | endorsed |
| R4-2014462 | 23/11/2020 08:54:36 | agreed |
| R4-2014463 | 23/11/2020 08:54:40 | agreed |
| R4-2014488 | 10/11/2020 21:23:51 | noted |
| R4-2014666 | 10/11/2020 20:59:06 | revised |
| R4-2014753 | 23/11/2020 08:57:41 | endorsed |
| R4-2014754 | 23/11/2020 08:57:55 | agreed |
| R4-2014755 | 23/11/2020 08:57:53 | agreed |
| R4-2014763 | 12/11/2020 14:56:41 | postponed |
| R4-2014765 | 11/11/2020 18:42:28 | revised |
| R4-2014781 | 23/11/2020 08:58:21 | withdrawn |
| R4-2014781 | 23/11/2020 08:58:36 | endorsed |
| R4-2014782 | 23/11/2020 08:58:54 | agreed |
| R4-2014783 | 23/11/2020 08:59:18 | agreed |
| R4-2014784 | 23/11/2020 08:59:29 | endorsed |
| R4-2014786 | 23/11/2020 08:51:12 | agreed |
| R4-2014787 | 23/11/2020 08:51:26 | endorsed |
| R4-2014788 | 23/11/2020 08:51:36 | agreed |
| R4-2014800 | 23/11/2020 08:53:58 | endorsed |
| R4-2014801 | 23/11/2020 08:54:05 | agreed |
| R4-2014802 | 23/11/2020 08:54:03 | agreed |
| R4-2014803 | 23/11/2020 08:54:10 | agreed |
| R4-2014804 | 23/11/2020 08:58:11 | endorsed |
| R4-2014806 | 23/11/2020 08:58:39 | withdrawn |
| R4-2014968 | 23/11/2020 08:59:04 | agreed |
| R4-2014970 | 23/11/2020 08:59:48 | agreed |
| R4-2015057 | 23/11/2020 08:48:29 | endorsed |
| R4-2015060 | 23/11/2020 08:55:40 | endorsed |
| R4-2015063 | 23/11/2020 08:56:20 | endorsed |
| R4-2015066 | 23/11/2020 08:56:48 | endorsed |
| R4-2015067 | 23/11/2020 08:57:02 | agreed |
| R4-2015070 | 23/11/2020 09:10:02 | agreed |
| R4-2015184 | 23/11/2020 08:50:56 | agreed |
| R4-2015185 | 23/11/2020 08:56:09 | agreed |
| R4-2015188 | 23/11/2020 08:59:55 | agreed |
| R4-2015200 | 11/11/2020 08:45:11 | revised |
| R4-2015209 | 12/11/2020 14:56:56 | withdrawn |
| R4-2015213 | 10/11/2020 21:00:39 | revised |
| R4-2015214 | 23/11/2020 08:53:09 | endorsed |
| R4-2015215 | 23/11/2020 08:53:17 | agreed |
| R4-2015216 | 23/11/2020 08:53:23 | agreed |
| R4-2015300 | 11/11/2020 17:21:56 | revised |
| R4-2015319 | 17/11/2020 08:11:37 | noted |
| R4-2015704 | 23/11/2020 08:51:49 | agreed |
| R4-2015705 | 23/11/2020 08:51:56 | agreed |
| R4-2015705 | 23/11/2020 08:52:06 | endorsed |
| R4-2015706 | 23/11/2020 08:52:16 | agreed |
| R4-2015788 | 10/11/2020 21:04:08 | revised |
| R4-2015891 | 19/11/2020 07:59:15 | withdrawn |
| R4-2015892 | 19/11/2020 07:59:23 | withdrawn |
| R4-2015893 | 19/11/2020 07:59:29 | withdrawn |
| R4-2015896 | 19/11/2020 07:58:28 | withdrawn |
| R4-2015916 | 23/11/2020 08:47:55 | endorsed |
| R4-2015917 | 23/11/2020 08:52:31 | endorsed |
| R4-2015917 | 23/11/2020 08:52:40 | agreed |
| R4-2015917 | 23/11/2020 08:52:46 | endorsed |
| R4-2015918 | 23/11/2020 08:54:53 | endorsed |
| R4-2015919 | 23/11/2020 08:48:04 | agreed |
| R4-2015920 | 23/11/2020 08:48:11 | agreed |
| R4-2015921 | 23/11/2020 08:52:48 | agreed |
| R4-2015922 | 23/11/2020 08:55:12 | agreed |
| R4-2015923 | 23/11/2020 08:55:19 | agreed |
| R4-2015924 | 23/11/2020 08:48:17 | agreed |
| R4-2015925 | 23/11/2020 08:52:56 | agreed |
| R4-2015926 | 23/11/2020 08:55:31 | agreed |
| R4-2015961 | 23/11/2020 11:28:39 | agreed |
| R4-2015965 | 23/11/2020 11:28:51 | agreed |
| R4-2016075 | 11/11/2020 11:49:16 | not concluded |
| R4-2016075 | 11/11/2020 11:49:33 | revised |
| R4-2016145 | 16/11/2020 14:06:20 | endorsed |
| R4-2016181 | 23/11/2020 09:10:14 | endorsed |
| R4-2016183 | 23/11/2020 09:10:23 | agreed |
| R4-2016220 | 18/11/2020 15:02:50 | withdrawn |
| R4-2016232 | 23/11/2020 09:09:15 | endorsed |
| R4-2016234 | 23/11/2020 09:09:35 | withdrawn |
| R4-2016287 | 17/11/2020 08:11:21 | withdrawn |
| R4-2016331 | 16/11/2020 07:58:25 | noted |
| R4-2016489 | 19/11/2020 09:54:21 | withdrawn |
| R4-2016541 | 23/11/2020 09:09:44 | agreed |
| R4-2016542 | 23/11/2020 09:09:53 | endorsed |
| R4-2016777 | 04/11/2020 16:54:18 | not concluded |
| R4-2016778 | 04/11/2020 16:54:52 | not concluded |
| R4-2016849 | 12/11/2020 11:11:51 | approved |
| R4-2016859 | 23/11/2020 09:03:47 | agreed |
| R4-2016860 | 23/11/2020 09:03:57 | agreed |
| R4-2016913 | 16/11/2020 07:58:14 | withdrawn |
| R4-2016992 | 23/11/2020 09:09:26 | agreed |
| R4-2016995 | 11/11/2020 08:45:23 | not concluded |
| R4-2016998 | 11/11/2020 08:48:01 | not concluded |
| R4-2017046 | 11/11/2020 16:56:41 | revised |
| R4-2017071 | 23/11/2020 08:08:13 | agreed |
| R4-2017073 | 23/11/2020 08:09:09 | agreed |
| R4-2017105 | 23/11/2020 08:10:39 | endorsed |
| R4-2017124 | 11/11/2020 11:28:38 | revised |
| R4-2017128 | 11/11/2020 11:29:20 | revised |
| R4-2017134 | 23/11/2020 08:09:18 | agreed |
| R4-2017172 | 23/11/2020 08:09:26 | agreed |
| R4-2017252 | 10/11/2020 15:16:30 | not concluded |
| R4-2017252 | 23/11/2020 08:09:31 | agreed |
| R4-2017253 | 23/11/2020 08:09:38 | agreed |
| R4-2017264 | 23/11/2020 08:09:45 | agreed |
| R4-2017329 | 11/11/2020 11:30:44 | not concluded |
| R4-2017330 | 11/11/2020 11:30:55 | not concluded |
| R4-2017352 | 23/11/2020 08:10:47 | endorsed |
| R4-2017359 | 23/11/2020 08:10:57 | endorsed |
| R4-2017360 | 23/11/2020 08:11:09 | endorsed |
| R4-2017373 | 23/11/2020 08:11:20 | partially approved |
| R4-2017373 | 23/11/2020 08:11:23 | endorsed |
| R4-2017376 | 23/11/2020 08:11:32 | endorsed |
| R4-2017386 | 23/11/2020 08:11:42 | endorsed |
| R4-2017389 | 23/11/2020 08:11:51 | endorsed |
| R4-2017424 | 06/11/2020 11:44:07 | revised |
| R4-2017473 | 23/11/2020 11:28:23 | agreed |
| R4-2017516 | 12/11/2020 16:28:36 | revised |
| R4-2017645 | 10/11/2020 14:34:56 | withdrawn |
| R4-2017646 | 10/11/2020 14:34:58 | withdrawn |
| R4-2017660 | 11/11/2020 10:17:47 | not concluded |
| R4-2017661 | 11/11/2020 11:30:09 | not concluded |
| R4-2017663 | 23/11/2020 11:29:02 | agreed |
| R4-2017664 | 23/11/2020 11:28:17 | agreed |
| R4-2017668 | 12/11/2020 12:53:00 | not concluded |
| R4-2017683 | 23/11/2020 11:28:30 | agreed |
| R4-2017684 | 13/11/2020 19:37:05 | not concluded |
| R4-2017684 | 23/11/2020 11:28:45 | agreed |
| R4-2017799 | 17/11/2020 08:32:29 | noted |
| R4-2017800 | 17/11/2020 08:32:30 | noted |
| R4-2017801 | 17/11/2020 08:32:32 | noted |
| R4-2017802 | 17/11/2020 08:32:34 | noted |
| R4-2017803 | 11/11/2020 09:11:12 | conditionally approved |
| R4-2017803 | 11/11/2020 09:11:16 | not concluded |
| R4-2017805 | 11/11/2020 08:13:18 | not concluded |
| R4-2017805 | 23/11/2020 08:48:51 | agreed |
| R4-2017806 | 11/11/2020 12:41:01 | not concluded |
| R4-2017807 | 11/11/2020 12:40:54 | not concluded |
| R4-2017807 | 23/11/2020 08:55:52 | agreed |
| R4-2017808 | 11/11/2020 12:40:48 | not concluded |
| R4-2017808 | 23/11/2020 08:55:59 | agreed |
| R4-2017809 | 11/11/2020 12:40:39 | not concluded |
| R4-2017809 | 23/11/2020 08:56:32 | agreed |
| R4-2017810 | 11/11/2020 12:40:01 | not concluded |
| R4-2017810 | 23/11/2020 08:57:18 | agreed |
| R4-2017840 | 23/11/2020 09:00:03 | agreed |
| R4-2017841 | 23/11/2020 09:00:14 | endorsed |
| R4-2017846 | 23/11/2020 09:08:50 | approved |
| R4-2018002 | 17/11/2020 15:52:05 | noted |
| R4-2018003 | 17/11/2020 08:32:37 | noted |
| R4-2018004 | 17/11/2020 08:32:39 | noted |

## Annex B: List of change requests

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Document | Title | Source | Spec | CR | Rev | Rel | Cat | WI | Decision |
| R4-2017834 | CR for FR2 FWA RF requirements | Huawei | - | - | - | - | - | - | withdrawn |
| R4-2014045 | Correction of B88 UL EARFCN | Huawei,HiSilicon | 36.101 | 5676 | - | Rel-16 | F | TEI16 | agreed |
| R4-2014162 | LTE CA\_NS\_04 PC2 256QAM AMPR | Qualcomm Inc. | 36.101 | 5677 | - | Rel-16 | F | TEI16 | withdrawn |
| R4-2014163 | LTE CA\_NS\_04 PC2 256QAM AMPR | Qualcomm Inc. | 36.101 | 5678 | - | Rel-16 | F | TEI16 | withdrawn |
| R4-2014164 | CR CatF LTE CA\_NS\_04 PC2 256QAM AMPR | Qualcomm | 36.101 | 5679 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2014302 | Introduction of LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL to TS36.101 | LG Electronics Polska | 36.101 | 5680 | - | Rel-17 | B | LTE\_CA\_R17\_xBDL\_2BUL-Core | withdrawn |
| R4-2014311 | Clarifications and corrections on UE co-ex requirements(R15) | SoftBank Corp. | 36.101 | 5681 | - | Rel-15 | F | LTE\_CA\_R15\_2DL2UL-Core | revised |
| R4-2017830 | Clarifications and corrections on UE co-ex requirements(R15) | SoftBank Corp. | 36.101 | 5681 | 1 | Rel-15 | F | LTE\_CA\_R15\_2DL2UL-Core | agreed |
| R4-2014312 | Clarifications and corrections on UE co-ex requirements(R16) | SoftBank Corp. | 36.101 | 5682 | - | Rel-16 | A | LTE\_CA\_R15\_2DL2UL-Core | revised |
| R4-2017831 | Clarifications and corrections on UE co-ex requirements(R16) | SoftBank Corp. | 36.101 | 5682 | 1 | Rel-16 | A | LTE\_CA\_R15\_2DL2UL-Core | agreed |
| R4-2014510 | LTE CA corrections | Nokia | 36.101 | 5683 | - | Rel-16 | F | TEI16 | agreed |
| R4-2014511 | Band 88 and 87 bracket removal | Nokia | 36.101 | 5684 | - | Rel-16 | F | LTE410\_Europe\_PPDR-Core | agreed |
| R4-2014896 | Coexistence cleanup for 36101 Rel15 | Apple Inc. | 36.101 | 5685 | - | Rel-15 | F | TEI | agreed |
| R4-2014897 | Coexistence cleanup for 36101 Rel16 | Apple Inc. | 36.101 | 5686 | - | Rel-16 | F | TEI16 | agreed |
| R4-2015070 | Introduction of LTE inter-band Carrier Aggregation for x bands DL (x=4, 5) with 1 band UL to TS36.101 | Nokia, Nokia Shanghai Bell | 36.101 | 5687 | - | Rel-17 | B | LTE\_CA\_R17\_xBDL\_1BUL-Core | agreed |
| R4-2015549 | CR for 36.101 to clarify the SCS supports for LTE MBMS (Rel-14) | Huawei, HiSilicon | 36.101 | 5688 | - | Rel-14 | F | MBMS\_LTE\_enh2-Core | revised |
| R4-2016796 | CR for 36.101 to clarify the SCS supports for LTE MBMS (Rel-14) | Huawei, HiSilicon, ZTE | 36.101 | 5688 | 1 | Rel-14 | F | MBMS\_LTE\_enh2-Core | agreed |
| R4-2015550 | CR for 36.101 to clarify the SCS supports for LTE MBMS (Rel-15) | Huawei, HiSilicon, ZTE | 36.101 | 5689 | - | Rel-15 | A | MBMS\_LTE\_enh2-Core | agreed |
| R4-2015551 | CR for 36.101 to clarify the SCS supports for LTE MBMS (Rel-16) | Huawei, HiSilicon, ZTE | 36.101 | 5690 | - | Rel-16 | A | MBMS\_LTE\_enh2-Core | agreed |
| R4-2015589 | CR on cleanup for LTE FeMBMS(Rel-14) | Huawei, HiSilicon | 36.101 | 5691 | - | Rel-14 | F | TEI14 | revised |
| R4-2017452 | CR on cleanup for LTE FeMBMS(Rel-14) | Huawei, HiSilicon | 36.101 | 5691 | 1 | Rel-14 | F | TEI14 | agreed |
| R4-2015590 | CR on cleanup for LTE FeMBMS(Rel-15) | Huawei, HiSilicon | 36.101 | 5692 | - | Rel-15 | A | TEI14 | revised |
| R4-2017453 | CR on cleanup for LTE FeMBMS(Rel-15) | Huawei, HiSilicon | 36.101 | 5692 | 1 | Rel-15 | A | TEI14 | agreed |
| R4-2015591 | CR on cleanup for LTE FeMBMS(Rel-16) | Huawei, HiSilicon | 36.101 | 5693 | - | Rel-16 | A | TEI14 | revised |
| R4-2017454 | CR on cleanup for LTE FeMBMS(Rel-16) | Huawei, HiSilicon | 36.101 | 5693 | 1 | Rel-16 | A | TEI14 | agreed |
| R4-2015613 | CR on cleanup for LTE-based 5G terrestrial broadcast | Huawei, HiSilicon | 36.101 | 5694 | - | Rel-16 | F | LTE\_terr\_bcast-Perf | revised |
| R4-2017459 | CR on cleanup for LTE-based 5G terrestrial broadcast | Huawei, HiSilicon | 36.101 | 5694 | 1 | Rel-16 | F | LTE\_terr\_bcast-Perf | agreed |
| R4-2015630 | CR: Updates to LTE V2X performance requirements | Huawei, HiSilicon | 36.101 | 5695 | - | Rel-14 | F | LTE\_V2X-Perf | agreed |
| R4-2015631 | CR: Cleanup for NPDSCH performance requirements for multi-TB interleaved transmission in TS 36.101 | Huawei, HiSilicon | 36.101 | 5696 | - | Rel-16 | F | NB\_IOTenh3-Perf | revised |
| R4-2017457 | CR: Cleanup for NPDSCH performance requirements for multi-TB interleaved transmission in TS 36.101 | Huawei, HiSilicon | 36.101 | 5696 | 1 | Rel-16 | F | NB\_IOTenh3-Perf | agreed |
| R4-2015668 | CR for 36.101: Cleanup for performance requirements of sTTI (Rel-15) | Huawei, HiSilicon | 36.101 | 5697 | - | Rel-15 | F | LTE\_sTTIandPT-Perf | revised |
| R4-2017455 | CR for 36.101: Cleanup for performance requirements of sTTI (Rel-15) | Huawei, HiSilicon | 36.101 | 5697 | 1 | Rel-15 | F | LTE\_sTTIandPT-Perf | agreed |
| R4-2015669 | CR for 36.101: Cleanup for performance requirements of sTTI (Rel-16) | Huawei, HiSilicon | 36.101 | 5698 | - | Rel-16 | A | LTE\_sTTIandPT-Perf | revised |
| R4-2017456 | CR for 36.101: Cleanup for performance requirements of sTTI (Rel-16) | Huawei, HiSilicon | 36.101 | 5698 | 1 | Rel-16 | A | LTE\_sTTIandPT-Perf | revised |
| R4-2017680 | CR for 36.101: Cleanup for performance requirements of sTTI (Rel-16) | Huawei, HiSilicon | 36.101 | 5698 | 2 | Rel-16 | A | LTE\_sTTIandPT-Perf | agreed |
| R4-2015835 | CR: Addition of applicability for MTC UE capable of 64QAM DL | Ericsson | 36.101 | 5699 | - | Rel-15 | F | LTE\_eMTC4-Perf | agreed |
| R4-2015836 | Clean up of enhanced MPDCCH demodulation requirements | Ericsson | 36.101 | 5700 | - | Rel-16 | F | LTE\_eMTC5-Perf | agreed |
| R4-2015837 | Clean up of CSI-RS based PMI reporting test for non-BL UEs | Ericsson | 36.101 | 5701 | - | Rel-16 | F | LTE\_eMTC5-Perf | revised |
| R4-2017458 | Clean up of CSI-RS based PMI reporting test for non-BL UEs | Ericsson | 36.101 | 5701 | 1 | Rel-16 | F | LTE\_eMTC5-Perf | agreed |
| R4-2016035 | CR Correction to B72 coex - CA\_NS\_08 - Band 10 protection 36.101 Rel15 | Skyworks Solutions Inc. | 36.101 | 5702 | - | Rel-15 | F | TEI15 | revised |
| R4-2016996 | CR Correction to B72 coex - CA\_NS\_08 - Band 10 protection 36.101 Rel15 | Skyworks Solutions Inc. | 36.101 | 5702 | 1 | Rel-15 | F | TEI15 | agreed |
| R4-2016040 | CR Correction to B72 coex - CA\_NS\_08 - Band 10 protection 36.101 Rel16 | Skyworks Solutions Inc. | 36.101 | 5703 | - | Rel-16 | A | TEI16 | revised |
| R4-2016997 | CR Correction to B72 coex - CA\_NS\_08 - Band 10 protection 36.101 Rel16 | Skyworks Solutions Inc. | 36.101 | 5703 | 1 | Rel-16 | A | TEI16 | agreed |
| R4-2016129 | CR to TS 36.101 clarifications on supported SCS for UE supporting LTE MBMS | ZTE Corporation | 36.101 | 5704 | - | Rel-14 | F | LTE\_terr\_bcast | not pursued |
| R4-2016130 | CR to TS 36.101 clarifications on supported SCS for UE supporting LTE MBMS | ZTE Corporation | 36.101 | 5705 | - | Rel-15 | A | LTE\_terr\_bcast | withdrawn |
| R4-2016131 | CR to TS 36.101 clarifications on supported SCS for UE supporting LTE MBMS | ZTE Corporation | 36.101 | 5706 | - | Rel-16 | A | LTE\_terr\_bcast | withdrawn |
| R4-2016340 | CR for editorial corrections 36.101 | Ericsson | 36.101 | 5707 | - | Rel-16 | F | LTE\_CA\_R16\_intra-Core | revised |
| R4-2016795 | CR for editorial corrections 36.101 | Ericsson | 36.101 | 5707 | 1 | Rel-16 | F | LTE\_CA\_R16\_intra-Core | agreed |
| R4-2016450 | CR for 36.101: Corrections for UL CA\_41D | T-Mobile USA | 36.101 | 5708 | - | Rel-16 | F | LTE\_CA\_R16\_intra-Core | agreed |
| R4-2016541 | Introduction of completed R17 3DL band combinations to TS 36.101 | Huawei, HiSilicon | 36.101 | 5709 | - | Rel-16 | B | LTE\_CA\_R16\_3BDL\_1BUL | agreed |
| R4-2016992 | Introduction of Rel-17 LTE inter-band CA for 2 bands DL with 1 band UL combinations in TS36.101 | Qualcomm Incorporated | 36.101 | 5710 | - | Rel-17 | B | LTE\_CA\_R17\_2BDL\_1BUL-Core | agreed |
| R4-2017656 | CR: Updates to LTE V2X performance requirements | Huawei, HiSilicon | 36.101 | 5711 | - | Rel-15 | A | LTE\_V2X-Perf | agreed |
| R4-2017657 | CR: Updates to LTE V2X performance requirements | Huawei, HiSilicon | 36.101 | 5712 | - | Rel-16 | A | LTE\_V2X-Perf | agreed |
| R4-2014332 | Introduction of 1880-1920MHz SUL band into Rel-16 TS 36.104 | CMCC, Huawei, HiSilicon | 36.104 | 4912 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | agreed |
| R4-2014343 | Introduction of 2300-2400MHz SUL band into Rel-16 TS 36.104 | CMCC, Huawei, HiSilicon | 36.104 | 4913 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | agreed |
| R4-2015359 | draftCR to 36104 on introducing new SUL band n99 | Huawei,HiSilicon | 36.104 | 4914 | - | Rel-17 | B | NR\_SUL\_UL\_n24-Core | not pursued |
| R4-2015632 | CR: Addition of NPUSCH format1 performance requirements for multi-TB interleaved transmission in TS 36.104 | Huawei, HiSilicon | 36.104 | 4915 | - | Rel-16 | B | NB\_IOTenh3-Perf | agreed |
| R4-2015687 | CR to TS 36.104: introduction of NR band n13 | Huawei, HiSilicon | 36.104 | 4916 | - | Rel-17 | B | NR\_n13-Core | agreed |
| R4-2016188 | CR to 36.104: Introduction of n96 medium range requirements | Nokia, Nokia Shanghai Bell | 36.104 | 4917 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2017463 | CR to 36.104: Introduction of n96 medium range requirements | Nokia, Nokia Shanghai Bell | 36.104 | 4917 | 1 | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2016359 | CR to 36.104 on Removal of additional limit for Band 1 | Ericsson | 36.104 | 4918 | - | Rel-15 | F | TEI15 | agreed |
| R4-2016360 | CR to 36.104 on Removal of additional limit for Band 1 | Ericsson | 36.104 | 4919 | - | Rel-16 | A | TEI15 | agreed |
| R4-2014413 | CR for TS36.133, Adding requirements for CSI-RS based L3 measurement | CATT | 36.133 | 6962 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | revised |
| R4-2017225 | CR for TS36.133, Adding requirements for CSI-RS based L3 measurement | CATT | 36.133 | 6962 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2014506 | CR to TS 36.133: Add information on the inter-band EN-DC configurations with no DL interruption | China Telecom | 36.133 | 6963 | - | Rel-16 | F | NR\_RF\_FR1-Core | agreed |
| R4-2014981 | CR on IDLE state cell re-selection requirements for HST in 36.133 | vivo, Huawei, HiSilicon | 36.133 | 6964 | - | Rel-16 | F | NR\_HST-Core | revised |
| R4-2017241 | CR on IDLE state cell re-selection requirements for HST in 36.133 | vivo, Huawei, HiSilicon | 36.133 | 6964 | 1 | Rel-16 | F | NR\_HST-Core | agreed |
| R4-2015461 | CR on maintaining V2X test cases in TS36.133 R14 | Huawei, HiSilicon | 36.133 | 6965 | - | Rel-14 | F | TEI14 | revised |
| R4-2017063 | CR on maintaining V2X test cases in TS36.133 R14 | Huawei, HiSilicon | 36.133 | 6965 | 1 | Rel-14 | F | TEI14 | agreed |
| R4-2015462 | CR on maintaining V2X test cases in TS36.133 R15 | Huawei, HiSilicon | 36.133 | 6966 | - | Rel-15 | A | TEI14 | agreed |
| R4-2015463 | CR on maintaining V2X test cases in TS36.133 R16 | Huawei, HiSilicon | 36.133 | 6967 | - | Rel-16 | A | TEI14 | agreed |
| R4-2015501 | Test cases for inter-frequency DAPS handover | Huawei, HiSilicon | 36.133 | 6968 | - | Rel-16 | B | LTE\_feMob-Perf | agreed |
| R4-2015502 | Correction on the synchronous condition for DAPS handover | Huawei, HiSilicon | 36.133 | 6969 | - | Rel-16 | F | LTE\_feMob-Core | revised |
| R4-2017322 | Correction on the synchronous condition for DAPS handover | Huawei, HiSilicon | 36.133 | 6969 | 1 | Rel-16 | F | LTE\_feMob-Core | agreed |
| R4-2015512 | CR on PUR requirements for NB-IoT | Huawei, HiSilicon | 36.133 | 6970 | - | Rel-16 | F | NB\_IOTenh3-Core | agreed |
| R4-2015513 | CR on RRM requirements for short DRX with eDRX configured for Rel-16 NB-IoT | Huawei, HiSilicon, Mediatek Inc. | 36.133 | 6971 | - | Rel-16 | F | NB\_IOTenh3-Core | revised |
| R4-2017074 | CR on RRM requirements for short DRX with eDRX configured for Rel-16 NB-IoT | Huawei, HiSilicon, Mediatek Inc. | 36.133 | 6971 | 1 | Rel-16 | F | NB\_IOTenh3-Core | agreed |
| R4-2015576 | CR to 36.133: Correction to NR CGI reading interruption requirements | ZTE | 36.133 | 6972 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2017190 | CR to 36.133: Correction to NR CGI reading interruption requirements | ZTE | 36.133 | 6972 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2015579 | CR to 36.133: Introduce requirements for mandatory gap pattern | ZTE | 36.133 | 6973 | - | Rel-16 | B | NR\_RRM\_enh-Core | revised |
| R4-2017200 | CR to 36.133: Introduce requirements for mandatory gap pattern | ZTE | 36.133 | 6973 | 1 | Rel-16 | B | NR\_RRM\_enh-Core | agreed |
| R4-2015731 | CR to remove intra-frequency ECID requirements for NE-DC 36133 R15 | Huawei, HiSilicon | 36.133 | 6974 | - | Rel-15 | F | NR\_newRAT-Core | postponed |
| R4-2017343 | CR to remove intra-frequency ECID requirements for NE-DC 36133 R15 | Huawei, HiSilicon | 36.133 | 6974 | 1 | Rel-15 | F | NR\_newRAT-Core | withdrawn |
| R4-2015732 | CR to remove intra-frequency ECID requirements for NE-DC 36133 R16 | Huawei, HiSilicon | 36.133 | 6975 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2015743 | CR on EMR requirements in 36.133 | Huawei, HiSilicon, MediaTek | 36.133 | 6976 | - | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2017121 | CR on EMR requirements in 36.133 | Huawei, HiSilicon, MediaTek | 36.133 | 6976 | 1 | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2017354 | CR on EMR requirements in 36.133 | Huawei, HiSilicon, MediaTek | 36.133 | 6976 | 2 | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2015758 | CR to introduce new measurement gap patterns for positioning in 36.133 | Huawei, HiSilicon | 36.133 | 6977 | - | Rel-16 | B | NR\_pos-Core | revised |
| R4-2017148 | CR to introduce new measurement gap patterns for positioning in 36.133 | Huawei, HiSilicon | 36.133 | 6977 | 1 | Rel-16 | B | NR\_pos-Core | postponed |
| R4-2015775 | CR on CGI reading requirements 36.133 | Huawei, HiSilicon | 36.133 | 6978 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2017192 | CR on CGI reading requirements 36.133 | Huawei, HiSilicon | 36.133 | 6978 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2015779 | CR on RSS measurement requirements | Huawei, HiSilicon | 36.133 | 6979 | - | Rel-16 | F | LTE\_eMTC5-Core | revised |
| R4-2017068 | CR on RSS measurement requirements | Huawei, HiSilicon | 36.133 | 6979 | 1 | Rel-16 | F | LTE\_eMTC5-Core | agreed |
| R4-2015780 | CR to introduce measurement requirements for eMTC in RRC\_Inactive | Huawei, HiSilicon | 36.133 | 6980 | - | Rel-16 | B | LTE\_eMTC5-Core | revised |
| R4-2017069 | CR to introduce measurement requirements for eMTC in RRC\_Inactive | Huawei, HiSilicon | 36.133 | 6980 | 1 | Rel-16 | B | LTE\_eMTC5-Core | agreed |
| R4-2015838 | CR: Correction of eMTC early-OOS/early-IS tests (Rel-14) | Ericsson | 36.133 | 6981 | - | Rel-14 | F | LTE\_feMTC-Perf | revised |
| R4-2017064 | CR: Correction of eMTC early-OOS/early-IS tests (Rel-14) | Ericsson | 36.133 | 6981 | 1 | Rel-14 | F | LTE\_feMTC-Perf | postponed |
| R4-2015839 | CR: Correction of eMTC early-OOS/early-IS tests | Ericsson | 36.133 | 6982 | - | Rel-15 | F | LTE\_feMTC-Perf | revised |
| R4-2017065 | CR: Correction of eMTC early-OOS/early-IS tests | Ericsson | 36.133 | 6982 | 1 | Rel-15 | F | LTE\_feMTC-Perf | postponed |
| R4-2015840 | CR: Correction of eMTC early-OOS/early-IS tests | Ericsson | 36.133 | 6983 | - | Rel-16 | A | LTE\_feMTC-Perf | withdrawn |
| R4-2015879 | CR on performance requirements tests for euCA. | Nokia, Nokia Shanghai Bell | 36.133 | 6984 | - | Rel-16 | F | LTE\_euCA-Core | revised |
| R4-2017062 | CR on performance requirements tests for euCA. | Nokia, Nokia Shanghai Bell | 36.133 | 6984 | 1 | Rel-16 | F | LTE\_euCA-Core | agreed |
| R4-2015882 | CR on UE requirement for MR-DC early measurement reporting in 36.133 | Nokia, Nokia Shanghai Bell | 36.133 | 6985 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | merged |
| R4-2016012 | CR 36.133 Corrections to test cases for SCell Hibernation | Ericsson | 36.133 | 6986 | - | Rel-15 | F | LTE\_euCA-Perf | agreed |
| R4-2016013 | CR 36.133 Correction to test cases for SCell Hibernation (Rel-16) | Ericsson | 36.133 | 6987 | - | Rel-16 | A | LTE\_euCA-Perf | agreed |
| R4-2016021 | CR 36.133 Removal of brackets for NR SCell Dormancy | Ericsson | 36.133 | 6988 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2017127 | CR 36.133 Removal of brackets for NR SCell Dormancy | Ericsson | 36.133 | 6988 | 1 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2016022 | CR 36.133 Removal of brackets for SFTD measurements | Ericsson | 36.133 | 6989 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016023 | CR 36.133 Removal of brackets for SFTD measurements (Rel-16) | Ericsson | 36.133 | 6990 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2016142 | Measurement requirement for eMTC UE in RRC\_INACTIVE | Ericsson | 36.133 | 6991 | - | Rel-16 | F | LTE\_eMTC5-Core | merged |
| R4-2016143 | Corrections to RSS based measurement requirements | Ericsson | 36.133 | 6992 | - | Rel-16 | F | LTE\_eMTC5-Core | merged |
| R4-2016145 | Test case on serving cell relaxation for eMTC | Ericsson | 36.133 | 6993 | - | Rel-16 | B | LTE\_eMTC5-Perf | endorsed |
| R4-2016178 | Big CR on FR2 new FWA UE RRM requirements in 36.133 | Ericsson | 36.133 | 6994 | - | Rel-17 | B | NR\_FR2\_FWA\_Bn257\_Bn258-Core | revised |
| R4-2017262 | Big CR on FR2 new FWA UE RRM requirements in TS 36.133 | Ericsson | 36.133 | 6994 | 1 | Rel-17 | B | NR\_FR2\_FWA\_Bn257\_Bn258-Core | agreed |
| R4-2016378 | Accuracy requirements for MR-DC EMR (36.133) | Nokia Corporation | 36.133 | 6995 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Perf | postponed |
| R4-2016379 | Maintenance CR on NR CGI reading in 36.133 | Nokia, Nokia Shanghai Bell | 36.133 | 6996 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2017193 | Maintenance CR on NR CGI reading in 36.133 | Nokia, Nokia Shanghai Bell | 36.133 | 6996 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2016385 | Correction on LTE conditional handover | Nokia, Nokia Shanghai Bell | 36.133 | 6997 | - | Rel-16 | F | LTE\_feMob-Core | revised |
| R4-2017079 | Correction on LTE conditional handover | Nokia, Nokia Shanghai Bell | 36.133 | 6997 | 1 | Rel-16 | F | LTE\_feMob-Core | agreed |
| R4-2016389 | Updates in EMR requirements | Ericsson | 36.133 | 6998 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | merged |
| R4-2016410 | Terminology updates for NR-U | Ericsson | 36.133 | 6999 | - | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2017082 | Terminology updates for NR-U | Ericsson | 36.133 | 6999 | 1 | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2016421 | Missing requirements for LTE SRS carrier-based switching | Ericsson | 36.133 | 7000 | - | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2016547 | RRM requirements for eMTC UE in RRC\_INACTIVE state | Qualcomm Incorporated | 36.133 | 7001 | - | Rel-16 | B | LTE\_eMTC5-Core | merged |
| R4-2016548 | Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA | Qualcomm Incorporated | 36.133 | 7002 | - | Rel-13 | F | TEI13 | revised |
| R4-2017066 | Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA | Qualcomm Incorporated | 36.133 | 7002 | 1 | Rel-13 | F | TEI13 | agreed |
| R4-2016549 | Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA | Qualcomm Incorporated | 36.133 | 7003 | - | Rel-14 | A | TEI14 | agreed |
| R4-2016550 | Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA | Qualcomm Incorporated | 36.133 | 7004 | - | Rel-15 | A | TEI15 | agreed |
| R4-2016551 | Correction to test parameters for FDD and TDD intra-frequency RSRP for Cat-M1 UE in CEModeA | Qualcomm Incorporated | 36.133 | 7005 | - | Rel-16 | A | LTE\_eMTC5-Perf | agreed |
| R4-2016552 | Test cases for DL channel quality report accuracy for eMTC UE | Qualcomm Incorporated | 36.133 | 7006 | - | Rel-16 | B | LTE\_eMTC5-Perf | endorsed |
| R4-2016553 | Test cases for DLchannel quality report accuracy in RRC\_CONNECTED for UE Cat-NB1 Standalone mode | Qualcomm Incorporated | 36.133 | 7007 | - | Rel-16 | B | NB\_IOTenh3-Perf | revised |
| R4-2017077 | Test cases for DLchannel quality report accuracy in RRC\_CONNECTED for UE Cat-NB1 Standalone mode | Qualcomm Incorporated | 36.133 | 7007 | 1 | Rel-16 | B | NB\_IOTenh3-Perf | endorsed |
| R4-2016554 | Introduction of intra-frequency sync and async LTE DAPS HO test cases | Qualcomm Incorporated | 36.133 | 7008 | - | Rel-16 | B | LTE\_feMob-Perf | agreed |
| R4-2016587 | Correction to RSS based measurement requirements | Nokia, Nokia Shanghai Bell | 36.133 | 7009 | - | Rel-16 | F | LTE\_eMTC5-Core | revised |
| R4-2017070 | Correction to RSS based measurement requirements | Nokia, Nokia Shanghai Bell, Ericsson | 36.133 | 7009 | 1 | Rel-16 | F | LTE\_eMTC5-Core | agreed |
| R4-2017071 | Big CR: Introduction of Rel-16 eMTC RRM performance requirements (TS 36.133) | Ericsson | 36.133 | 7010 | - | Rel-16 | F | LTE\_eMTC5-Core | agreed |
| R4-2017073 | Big CR: Introduction of Rel-16 Nb-IoT RRM RRM performance requirements (TS 36.133) | Huawei, HiSilicon | 36.133 | 7011 | - | Rel-16 | B | NB\_IOTenh3-Core | agreed |
| R4-2017308 | Test cases for LTE conditional handover | Nokia, Nokia Shanghai Bell | 36.133 | 7012 | - | Rel-16 | B | LTE\_feMob-Perf | agreed |
| R4-2014333 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 36.141 | CMCC, Huawei, HiSilicon | 36.141 | 1274 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | agreed |
| R4-2014344 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 36.141 | CMCC, Huawei, HiSilicon | 36.141 | 1275 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | agreed |
| R4-2014469 | CR to TS 36.141: Clarification on manufacturer | Nokia, Nokia Shanghai Bell | 36.141 | 1276 | - | Rel-13 | F | NB\_IOT-Perf | agreed |
| R4-2014470 | CR to TS 36.141: Clarification on manufacturer | Nokia, Nokia Shanghai Bell | 36.141 | 1277 | - | Rel-14 | A | NB\_IOT-Perf | agreed |
| R4-2014471 | CR to TS 36.141: Clarification on manufacturer | Nokia, Nokia Shanghai Bell | 36.141 | 1278 | - | Rel-15 | A | NB\_IOT-Perf | agreed |
| R4-2014472 | CR to TS 36.141: Clarification on manufacturer | Nokia, Nokia Shanghai Bell | 36.141 | 1279 | - | Rel-16 | A | NB\_IOT-Perf | agreed |
| R4-2014944 | Correction of eLAA FRC table | Nokia, Nokia Shanghai Bell | 36.141 | 1280 | - | Rel-14 | F | LTE\_eLAA-Perf | agreed |
| R4-2014945 | Correction of eLAA FRC table | Nokia, Nokia Shanghai Bell | 36.141 | 1281 | - | Rel-15 | A | LTE\_eLAA-Perf | agreed |
| R4-2014946 | Correction of eLAA FRC table | Nokia, Nokia Shanghai Bell | 36.141 | 1282 | - | Rel-16 | A | LTE\_eLAA-Perf | agreed |
| R4-2015362 | draftCR to 36141 on introducing new SUL band n99 | Huawei,HiSilicon | 36.141 | 1283 | - | Rel-17 | B | NR\_SUL\_UL\_n24-Core | not pursued |
| R4-2015633 | CR: Cleanup for NPUSCH format 1 conformance testing for multi-TB interleaved transmission in TS 36.141 | Huawei, HiSilicon | 36.141 | 1284 | - | Rel-16 | F | NB\_IOTenh3-Perf | agreed |
| R4-2015688 | CR to TS 36.141: introduction of NR band n13 | Huawei, HiSilicon | 36.141 | 1285 | - | Rel-17 | B | NR\_n13-Perf | agreed |
| R4-2016361 | CR to 36.141 on Removal of additional limit for Band 1 | Ericsson | 36.141 | 1286 | - | Rel-15 | F | TEI15 | agreed |
| R4-2016362 | CR to 36.141 on Removal of additional limit for Band 1 | Ericsson | 36.141 | 1287 | - | Rel-16 | A | TEI15 | agreed |
| R4-2014334 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.104 | CMCC, Huawei, HiSilicon | 37.104 | 0908 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | agreed |
| R4-2014345 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.104 | CMCC, Huawei, HiSilicon | 37.104 | 0909 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | agreed |
| R4-2015363 | draftCR to 37104 on introducing new SUL band n99 | Huawei,HiSilicon | 37.104 | 0910 | - | Rel-17 | B | NR\_SUL\_UL\_n24-Core | not pursued |
| R4-2015689 | CR to TS 37.104: introduction of NR band n13 | Huawei, HiSilicon | 37.104 | 0911 | - | Rel-17 | B | NR\_n13-Core | agreed |
| R4-2015957 | CR to TS 37.104: addition of missing note for BC1/BC3 OBUE applicability table for WA BS, Rel-16 | Huawei | 37.104 | 0912 | - | Rel-16 | F | MSR\_GSM\_UTRA\_LTE\_NR-Core, TEI16 | agreed |
| R4-2016184 | CR to 37.104: Correction to ACLR limit in non-contiguous spectrum (Rel-15) | Nokia, Nokia Shanghai Bell | 37.104 | 0913 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016185 | CR to 37.104: Correction to ACLR limit in non-contiguous spectrum (Rel-16) | Nokia, Nokia Shanghai Bell | 37.104 | 0914 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2016189 | CR to 37.104: Introduction of n96 medium range requirements | Nokia, Nokia Shanghai Bell | 37.104 | 0915 | - | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2016349 | CR to 37.104 on Removal of additional limit for Band 1 | Ericsson | 37.104 | 0916 | - | Rel-15 | F | TEI15 | agreed |
| R4-2016350 | CR to 37.104 on Removal of additional limit for Band 1 | Ericsson | 37.104 | 0917 | - | Rel-16 | A | TEI15 | agreed |
| R4-2016363 | CR to 37.104 on MSR Blocking correction | Ericsson | 37.104 | 0918 | - | Rel-15 | F | TEI15 | agreed |
| R4-2016364 | CR to 37.104 on MSR Blocking correction | Ericsson | 37.104 | 0919 | - | Rel-16 | A | TEI15 | agreed |
| R4-2014335 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.105 | CMCC, Huawei, HiSilicon | 37.105 | 0200 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | agreed |
| R4-2014346 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.105 | CMCC, Huawei, HiSilicon | 37.105 | 0201 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | agreed |
| R4-2015365 | draftCR to 37105 on introducing new SUL band n99 | Huawei,HiSilicon | 37.105 | 0202 | - | Rel-17 | B | NR\_SUL\_UL\_n24-Core | not pursued |
| R4-2015691 | CR to TS 37.105: introduction of NR band n13 | Huawei, HiSilicon | 37.105 | 0203 | - | Rel-17 | B | NR\_n13-Core | agreed |
| R4-2015967 | CR to TS 37.105: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | 37.105 | 0204 | - | Rel-16 | F | TEI16, AASenh\_BS\_LTE\_UTRA-Core, MSR\_GSM\_UTRA\_LTE\_NR-Core | not pursued |
| R4-2016077 | CR to TS 37.105: Corrections to core requirements including UEM additional requirements, Rel-15 | Huawei | 37.105 | 0205 | - | Rel-15 | F | TEI15, AAS\_BS\_LTE\_UTRA-Core | revised |
| R4-2017591 | CR to TS 37.105: Corrections to core requirements including UEM additional requirements, Rel-15 | Huawei | 37.105 | 0205 | 1 | Rel-15 | F | TEI15, AAS\_BS\_LTE\_UTRA-Core | agreed |
| R4-2016078 | CR to TS 37.105: Corrections to core requirements including UEM additional requirements, Rel-16 | Huawei | 37.105 | 0206 | - | Rel-16 | A | TEI15, AAS\_BS\_LTE\_UTRA-Core | agreed |
| R4-2016190 | CR to 37.105: Introduction of n96 medium range requirements | Nokia, Nokia Shanghai Bell | 37.105 | 0207 | - | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2016353 | CR to 37.105 on Removal of additional limit for Band 1 | Ericsson | 37.105 | 0208 | - | Rel-15 | F | TEI15 | revised |
| R4-2017430 | CR to 37.105 on Removal of additional limit for Band 1 | Ericsson | 37.105 | 0208 | 1 | Rel-15 | F | TEI15 | agreed |
| R4-2016354 | CR to 37.105 on Removal of additional limit for Band 1 | Ericsson | 37.105 | 0209 | - | Rel-16 | A | TEI15 | agreed |
| R4-2016367 | CR to 37.105 on NR+UTRA support for AAS | Ericsson | 37.105 | 0210 | - | Rel-15 | F | AASenh\_BS\_LTE\_UTRA-Core | not pursued |
| R4-2016368 | CR to 37.105 on NR+UTRA support for AAS | Ericsson | 37.105 | 0211 | - | Rel-16 | A | AASenh\_BS\_LTE\_UTRA-Core | withdrawn |
| R4-2016430 | CR to TS 37.105: addition of the OBUE applicability table, Rel-15 | Huawei | 37.105 | 0212 | - | Rel-15 | F | TEI15, AASenh\_BS\_LTE\_UTRA-Core | revised |
| R4-2017432 | CR to TS 37.105: addition of the OBUE applicability table, Rel-15 | Huawei | 37.105 | 0212 | 1 | Rel-15 | F | TEI15, AASenh\_BS\_LTE\_UTRA-Core | agreed |
| R4-2017668 | CR to TS 37.105: addition of the OBUE applicability table, Rel-16 | Huawei | 37.105 | 0213 | - | Rel-16 | A | TEI15, AASenh\_BS\_LTE\_UTRA-Core | agreed |
| R4-2015376 | CR to 37.107 with update of EDT level | Nokia, Nokia Shanghai Bell | 37.107 | 0008 | - | Rel-15 | F | LTE\_eLAA | revised |
| R4-2017451 | CR to 37.107 with update of EDT level | Nokia, Nokia Shanghai Bell | 37.107 | 0008 | 1 | Rel-15 | F | LTE\_eLAA | agreed |
| R4-2015377 | CR to 37.107 with update of EDT level | Nokia, Nokia Shanghai Bell | 37.107 | 0009 | - | Rel-16 | A | LTE\_eLAA | agreed |
| R4-2015100 | CR to TS 37.113 on Voltage dips and interruptions, Release 15 | Ericsson | 37.113 | 0110 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017435 | CR to TS 37.113 on Voltage dips and interruptions, Release 15 | Ericsson | 37.113 | 0110 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015101 | CR to TS 37.113 on Voltage dips and interruptions, Release 16 | Ericsson | 37.113 | 0111 | - | Rel-16 | A | NR\_newRAT-Perf | revised |
| R4-2017436 | CR to TS 37.113 on Voltage dips and interruptions, Release 16 | Ericsson | 37.113 | 0111 | 1 | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014336 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.141 | CMCC, Huawei, HiSilicon | 37.141 | 0949 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | agreed |
| R4-2014347 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.141 | CMCC, Huawei, HiSilicon | 37.141 | 0950 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | agreed |
| R4-2015364 | draftCR to 37141 on introducing new SUL band n99 | Huawei,HiSilicon | 37.141 | 0951 | - | Rel-17 | B | NR\_SUL\_UL\_n24-Core | not pursued |
| R4-2015690 | CR to TS 37.141: introduction of NR band n13 | Huawei, HiSilicon | 37.141 | 0952 | - | Rel-17 | B | NR\_n13-Perf | agreed |
| R4-2016186 | CR to 37.141: Correction to ACLR limit in non-contiguous spectrum (Rel-15) | Nokia, Nokia Shanghai Bell | 37.141 | 0953 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2016187 | CR to 37.141: Correction to ACLR limit in non-contiguous spectrum (Rel-16) | Nokia, Nokia Shanghai Bell | 37.141 | 0954 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2016351 | CR to 37.141 on Removal of additional limit for Band 1 | Ericsson | 37.141 | 0955 | - | Rel-15 | F | TEI15 | agreed |
| R4-2016352 | CR to 37.141 on Removal of additional limit for Band 1 | Ericsson | 37.141 | 0956 | - | Rel-16 | A | TEI15 | agreed |
| R4-2016365 | CR to 37.141 on MSR Blocking correction | Ericsson | 37.141 | 0957 | - | Rel-15 | F | TEI15 | agreed |
| R4-2016366 | CR to 37.141 on MSR Blocking correction | Ericsson | 37.141 | 0958 | - | Rel-16 | A | TEI15 | agreed |
| R4-2014337 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-1 | CMCC, Huawei, HiSilicon | 37.145-1 | 0217 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | agreed |
| R4-2014348 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-1 | CMCC, Huawei, HiSilicon | 37.145-1 | 0218 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | agreed |
| R4-2015366 | draftCR to 37145-1 on introducing new SUL band n99 | Huawei,HiSilicon | 37.145-1 | 0219 | - | Rel-17 | B | NR\_SUL\_UL\_n24-Core | not pursued |
| R4-2015692 | CR to TS 37.145-1: introduction of NR band n13 | Huawei, HiSilicon | 37.145-1 | 0220 | - | Rel-17 | B | NR\_n13-Perf | agreed |
| R4-2015949 | CR to TS 37.145-1: correction of manufacturer | Huawei | 37.145-1 | 0221 | - | Rel-13 | F | TEI13, AAS\_BS\_LTE\_UTRA-Perf | revised |
| R4-2017589 | CR to TS 37.145-1: correction of manufacturer | Huawei | 37.145-1 | 0221 | 1 | Rel-13 | F | TEI13, AAS\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2015950 | CR to TS 37.145-1: correction of manufacturer | Huawei | 37.145-1 | 0222 | - | Rel-14 | A | TEI13, AAS\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2015951 | CR to TS 37.145-1: correction of manufacturer | Huawei | 37.145-1 | 0223 | - | Rel-15 | A | TEI13, AAS\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2015952 | CR to TS 37.145-1: correction of manufacturer | Huawei | 37.145-1 | 0224 | - | Rel-16 | A | TEI13, AAS\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2015968 | CR to TS 37.145-1: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | 37.145-1 | 0225 | - | Rel-16 | F | TEI16, AASenh\_BS\_LTE\_UTRA-Perf, MSR\_GSM\_UTRA\_LTE\_NR-Perf | not pursued |
| R4-2016073 | CR to TS 37.145-1: Corrections to conformance requirements, Rel-15 | Huawei | 37.145-1 | 0226 | - | Rel-15 | F | TEI15, AAS\_BS\_LTE\_UTRA-Perf | revised |
| R4-2017590 | CR to TS 37.145-1: Corrections to conformance requirements, Rel-15 | Huawei | 37.145-1 | 0226 | 1 | Rel-15 | F | TEI15, AAS\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2016074 | CR to TS 37.145-1: Corrections to conformance requirements, Rel-16 | Huawei | 37.145-1 | 0227 | - | Rel-16 | A | TEI15, AAS\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2016202 | CR to 37.145-1: Correction to applicability of additional BC3 requirement (Rel-15) | Nokia, Nokia Shanghai Bell | 37.145-1 | 0228 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2016203 | CR to 37.145-1: Correction to applicability of additional BC3 requirement (Rel-16) | Nokia, Nokia Shanghai Bell | 37.145-1 | 0229 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2016355 | CR to 37.145-1 on Removal of additional limit for Band 1 | Ericsson | 37.145-1 | 0230 | - | Rel-15 | F | TEI15 | agreed |
| R4-2016356 | CR to 37.145-1 on Removal of additional limit for Band 1 | Ericsson | 37.145-1 | 0231 | - | Rel-16 | A | TEI15 | agreed |
| R4-2016431 | CR to TS 37.145-1: addition of the OBUE applicability table, Rel-15 | Huawei | 37.145-1 | 0232 | - | Rel-15 | F | TEI15, AASenh\_BS\_LTE\_UTRA-Perf | revised |
| R4-2017433 | CR to TS 37.145-1: addition of the OBUE applicability table, Rel-15 | Huawei | 37.145-1 | 0232 | 1 | Rel-15 | F | TEI15, AASenh\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2017669 | CR to TS 37.145-1: addition of the OBUE applicability table, Rel-16 | Huawei | 37.145-1 | 0233 | - | Rel-16 | A | TEI15, AASenh\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2014338 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-2 | CMCC, Huawei, HiSilicon | 37.145-2 | 0242 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | agreed |
| R4-2014349 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-2 | CMCC, Huawei, HiSilicon | 37.145-2 | 0243 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | agreed |
| R4-2015367 | draftCR to 37145-2 on introducing new SUL band n99 | Huawei,HiSilicon | 37.145-2 | 0244 | - | Rel-17 | B | NR\_SUL\_UL\_n24-Core | not pursued |
| R4-2015693 | CR to TS 37.145-2: introduction of NR band n13 | Huawei, HiSilicon | 37.145-2 | 0245 | - | Rel-17 | B | NR\_n13-Perf | agreed |
| R4-2015953 | CR to TS 37.145-2: correction of manufacturer | Huawei | 37.145-2 | 0246 | - | Rel-13 | F | TEI13, AAS\_BS\_LTE\_UTRA-Perf | revised |
| R4-2017649 | CR to TS 37.145-2: correction of manufacturer | Huawei | 37.145-2 | 0246 | 1 | Rel-13 | F | TEI13, AAS\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2015954 | CR to TS 37.145-2: correction of manufacturer | Huawei | 37.145-2 | 0247 | - | Rel-14 | A | TEI13, AAS\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2015955 | CR to TS 37.145-2: correction of manufacturer | Huawei | 37.145-2 | 0248 | - | Rel-15 | A | TEI13, AAS\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2015956 | CR to TS 37.145-2: correction of manufacturer | Huawei | 37.145-2 | 0249 | - | Rel-16 | A | TEI13, AAS\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2015969 | CR to TS 37.145-2: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | 37.145-2 | 0250 | - | Rel-16 | F | TEI16, AASenh\_BS\_LTE\_UTRA-Perf, MSR\_GSM\_UTRA\_LTE\_NR-Perf | not pursued |
| R4-2016068 | CR to TS 37.145-2 - Update CLTA definition, Rel-15 | Huawei | 37.145-2 | 0251 | - | Rel-15 | F | TEI15, AAS\_BS\_LTE\_UTRA-Perf | not pursued |
| R4-2016069 | CR to TS 37.145-2 - Update CLTA definition, Rel-16 | Huawei | 37.145-2 | 0252 | - | Rel-16 | A | TEI15, AAS\_BS\_LTE\_UTRA-Perf | withdrawn |
| R4-2016075 | CR to TS 37.145-2: Corrections to conformance requirements including UEM additional requirements, Rel-15 | Huawei | 37.145-2 | 0253 | - | Rel-15 | F | TEI15, AAS\_BS\_LTE\_UTRA-Perf | revised |
| R4-2017662 | CR to TS 37.145-2: Corrections to conformance requirements including UEM additional requirements, Rel-15 | Huawei | 37.145-2 | 0253 | 1 | Rel-15 | F | TEI15, AAS\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2016076 | CR to TS 37.145-2: Corrections to conformance requirements including UEM additional requirements, Rel-16 | Huawei | 37.145-2 | 0254 | - | Rel-16 | A | TEI15, AAS\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2016080 | CR to TS 37.145-2: Corrections to single RAT E-UTRA additional requirements for band 89, Rel-16 | Huawei | 37.145-2 | 0255 | - | Rel-16 | F | TEI15, AAS\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2016127 | CR to 37.145-2: Correction on NR REFSENS | ZTE Corporation | 37.145-2 | 0256 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2016128 | CR to 37.145-2: Correction on NR REFSENS | ZTE Corporation | 37.145-2 | 0257 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2016204 | CR to 37.145-2: Correction to applicability of additional BC3 requirement (Rel-15) | Nokia, Nokia Shanghai Bell | 37.145-2 | 0258 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2016205 | CR to 37.145-2: Correction to applicability of additional BC3 requirement (Rel-16) | Nokia, Nokia Shanghai Bell | 37.145-2 | 0259 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2016282 | CR to TS 37.145-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | 37.145-2 | 0260 | - | Rel-15 | F | NR\_newRAT-Perf | not pursued |
| R4-2017588 | CR to TS 37.145-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | 37.145-2 | 0260 | 1 | Rel-15 | F | NR\_newRAT-Perf | withdrawn |
| R4-2016283 | CR to TS 37.145-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | 37.145-2 | 0261 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2016357 | CR to 37.145-2 on Removal of additional limit for Band 1 | Ericsson | 37.145-2 | 0262 | - | Rel-15 | F | TEI15 | revised |
| R4-2017431 | CR to 37.145-2 on Removal of additional limit for Band 1 | Ericsson | 37.145-2 | 0262 | 1 | Rel-15 | F | TEI15 | agreed |
| R4-2016358 | CR to 37.145-2 on Removal of additional limit for Band 1 | Ericsson | 37.145-2 | 0263 | - | Rel-16 | A | TEI15 | agreed |
| R4-2016432 | CR to TS 37.145-2: addition of the OBUE applicability table, Rel-15 | Huawei | 37.145-2 | 0264 | - | Rel-15 | F | TEI15, AASenh\_BS\_LTE\_UTRA-Perf | revised |
| R4-2017434 | CR to TS 37.145-2: addition of the OBUE applicability table, Rel-15 | Huawei | 37.145-2 | 0264 | 1 | Rel-15 | F | TEI15, AASenh\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2016502 | TS 37.145-2: Corrections OTA SEM, OTA Rx intermod and OTA ACS | Ericsson | 37.145-2 | 0265 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2016503 | TS 37.145-2: Corrections OTA SEM, OTA Rx intermod and OTA ACS | Ericsson | 37.145-2 | 0266 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2017670 | CR to TS 37.145-2: addition of the OBUE applicability table, Rel-16 | Huawei | 37.145-2 | 0267 | - | Rel-16 | A | TEI15, AASenh\_BS\_LTE\_UTRA-Perf | agreed |
| R4-2015714 | CR to TR 37.941: Removal of Square Brackets | Ericsson | 37.941 | 0011 | - | Rel-15 | F | OTA\_BS\_testing-Perf | not pursued |
| R4-2015715 | CR to TR 37.941: Removal of Square Brackets | Ericsson | 37.941 | 0012 | - | Rel-16 | A | OTA\_BS\_testing-Perf | withdrawn |
| R4-2015960 | CR to TR 37.941: overall TR cleanup, Rel-15 | Huawei | 37.941 | 0013 | - | Rel-15 | F | OTA\_BS\_testing-Perf | revised |
| R4-2017575 | CR to TR 37.941: overall TR cleanup, Rel-15 | Huawei | 37.941 | 0013 | 1 | Rel-15 | F | OTA\_BS\_testing-Perf | revised |
| R4-2017683 | CR to TR 37.941: overall TR cleanup, Rel-15 | Huawei | 37.941 | 0013 | 2 | Rel-15 | F | OTA\_BS\_testing-Perf | agreed |
| R4-2015961 | CR to TR 37.941: overall TR cleanup, Rel-16 | Huawei | 37.941 | 0014 | - | Rel-16 | A | OTA\_BS\_testing-Perf | agreed |
| R4-2015962 | CR to TR 37.941: MU and TT values alignments and corrections, Rel-15 | Huawei | 37.941 | 0015 | - | Rel-15 | F | OTA\_BS\_testing-Perf | revised |
| R4-2017579 | CR to TR 37.941: MU and TT values alignments and corrections, Rel-15 | Huawei | 37.941 | 0015 | 1 | Rel-15 | F | OTA\_BS\_testing-Perf | agreed |
| R4-2015963 | CR to TR 37.941: MU and TT values alignments and corrections, Rel-16 | Huawei | 37.941 | 0016 | - | Rel-16 | A | OTA\_BS\_testing-Perf | agreed |
| R4-2015964 | CR to TR 37.941: alignments and corrections to the MU contributors and MU derivations, Rel-15 | Huawei | 37.941 | 0017 | - | Rel-15 | F | OTA\_BS\_testing-Perf | revised |
| R4-2017578 | CR to TR 37.941: alignments and corrections to the MU contributors and MU derivations, Rel-15 | Huawei | 37.941 | 0017 | 1 | Rel-15 | F | OTA\_BS\_testing-Perf | revised |
| R4-2017684 | CR to TR 37.941: alignments and corrections to the MU contributors and MU derivations, Rel-15 | Huawei | 37.941 | 0017 | 2 | Rel-15 | F | OTA\_BS\_testing-Perf | agreed |
| R4-2015965 | CR to TR 37.941: alignments and corrections to the MU contributors and MU derivations, Rel-16 | Huawei | 37.941 | 0018 | - | Rel-16 | A | OTA\_BS\_testing-Perf | agreed |
| R4-2016290 | CR to TR 37.941: Corrections to TRP measurement procedures | Nokia, Nokia Shanghai Bell | 37.941 | 0019 | - | Rel-15 | F | OTA\_BS\_testing-Perf | revised |
| R4-2017576 | CR to TR 37.941: Corrections to TRP measurement procedures | Nokia, Nokia Shanghai Bell | 37.941 | 0019 | 1 | Rel-15 | F | OTA\_BS\_testing-Perf | agreed |
| R4-2016291 | CR to TR 37.941: Corrections to TRP measurement procedures | Nokia, Nokia Shanghai Bell | 37.941 | 0020 | - | Rel-16 | A | OTA\_BS\_testing-Perf | agreed |
| R4-2016293 | CR to TR 37.941: Additional test cases for PWS | ROHDE & SCHWARZ | 37.941 | 0021 | - | Rel-15 | F | OTA\_BS\_testing | agreed |
| R4-2016300 | Mirror CR to TR 37.941: Additional test cases for PWS | ROHDE & SCHWARZ | 37.941 | 0022 | - | Rel-16 | A | OTA\_BS\_testing | agreed |
| R4-2016466 | CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | 37.941 | 0023 | - | Rel-15 | F | OTA\_BS\_testing | revised |
| R4-2017577 | CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | 37.941 | 0023 | 1 | Rel-15 | F | OTA\_BS\_testing | agreed |
| R4-2016467 | Mirror CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | 37.941 | 0024 | - | Rel-16 | A | OTA\_BS\_testing | agreed |
| R4-2014327 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | 38.101-1 | 0408 | 2 | Rel-17 | B | DSS\_LTE\_B40\_NR\_Bn40-Core | revised |
| R4-2016942 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | 38.101-1 | 0408 | 3 | Rel-17 | B | DSS\_LTE\_B40\_NR\_Bn40-Core | agreed |
| R4-2014167 | CR CatF n7 NS\_46 AMPR and coexistence | Qualcomm Incorporated | 38.101-1 | 0492 | - | Rel-16 | F | NR\_n7\_BW | revised |
| R4-2017804 | CR CatF n7 NS\_46 AMPR and coexistence | Qualcomm Incorporated | 38.101-1 | 0492 | 1 | Rel-16 | F | NR\_n7\_BW | agreed |
| R4-2014168 | CR CatF CA\_n39-n41\_and CA\_n40-n41 Sync | Qualcomm Incorporated | 38.101-1 | 0493 | - | Rel-16 | F | TEI16 | withdrawn |
| R4-2014254 | CR to 38.101-1: UL MIMO EVM and emission requirements update | Qualcomm Incorporated | 38.101-1 | 0494 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016780 | CR to 38.101-1: UL MIMO EVM and emission requirements update | Qualcomm Incorporated | 38.101-1 | 0494 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014255 | CR to 38.101-1: UL MIMO EVM and emission requirements update | Qualcomm Incorporated | 38.101-1 | 0495 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2014307 | Clarification of additional spurious emission requirements on two bands uplink Inter-band CA(R15) | SoftBank Corp. | 38.101-1 | 0496 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2014308 | Clarification of additional spurious emission requirements on two bands uplink Inter-band CA(R16) | SoftBank Corp. | 38.101-1 | 0497 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2014323 | Correction on 5G V2X UE RF requirements in TS38.101-1 in rel-16 | LG Electronics France | 38.101-1 | 0498 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2016803 | Correction on 5G V2X UE RF requirements in TS38.101-1 in rel-16 | LG Electronics France | 38.101-1 | 0498 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2014330 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.101-1 | CMCC, Huawei, HiSilicon | 38.101-1 | 0499 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | agreed |
| R4-2014341 | introduction of 2300-2400MHz SUL band into Rel-17 TS 38.101-1 | CMCC, Huawei, HiSilicon | 38.101-1 | 0500 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | agreed |
| R4-2014402 | CR for TS38.101-1 Rel-15, Correction for definition of P-MPR | CATT | 38.101-1 | 0501 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2014403 | CR for TS38.101-1 Rel-16, Correction for definition of P-MPR | CATT | 38.101-1 | 0502 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2014423 | CR for TS 38.101-1, Introduce new band combination of V2X\_n39A-n47A and V2X\_n40A-n47A | CATT | 38.101-1 | 0503 | - | Rel-17 | B | NR\_LTE\_V2X\_PC5\_combos | revised |
| R4-2016872 | CR for TS 38.101-1, Introduce new band combination of V2X\_n39A-n47A and V2X\_n40A-n47A | CATT | 38.101-1 | 0503 | 1 | Rel-17 | B | NR\_LTE\_V2X\_PC5\_combos | agreed |
| R4-2014462 | CR on Introducing NR inter-band CA for 3DL Bands and 1UL band for 38.101-1 | CATT | 38.101-1 | 0504 | - | Rel-17 | B | NR\_CA\_R17\_3BDL\_1BUL-Core | agreed |
| R4-2014490 | Draft CR on introduction of shorter Transient Period Capability | Qualcomm Incorporated, Verizon, Dish Network, Ericsson, CMCC, Keysight Technologies, Nokia, Nokia Shanghai Bell, AT&T, ZTE, Vodafone, Orange, T-Mobile USA, Deutsche Telekom, Telecom Italia, CHTTL, China Telecom, SGS Wireless, Interdigital | 38.101-1 | 0505 | - | Rel-16 | B | TEI16 | postponed |
| R4-2014517 | n53 bracket removal | Nokia | 38.101-1 | 0506 | - | Rel-16 | F | NR\_n53-Core | agreed |
| R4-2014518 | A-MPR definition for CA\_n7B, CA\_n48B, CA\_n41B and CA\_n41C | Nokia | 38.101-1 | 0507 | - | Rel-16 | F | NR\_RF\_FR1-Core | revised |
| R4-2016814 | A-MPR definition for CA\_n7B, CA\_n48B, CA\_n41B and CA\_n41C | Nokia | 38.101-1 | 0507 | 1 | Rel-16 | F | NR\_RF\_FR1-Core | revised |
| R4-2017824 | A-MPR definition for CA\_n7B, CA\_n48B, CA\_n41B and CA\_n41C | Nokia | 38.101-1 | 0507 | 2 | Rel-16 | F | NR\_RF\_FR1-Core | agreed |
| R4-2014520 | TS 38.101-3: Addition of missing lower order fallbacks | Nokia, AT&T | 38.101-1 | 0508 | - | Rel-16 | B | TEI16 | revised |
| R4-2016832 | TS 38.101-3: Addition of missing lower order fallbacks | Nokia, AT&T | 38.101-1 | 0508 | 1 | Rel-16 | B | TEI16 | not pursued |
| R4-2014521 | TR 37.716-21-11: Addition of missing lower order fallbacks | Nokia, AT&T | 38.101-1 | 0509 | - | Rel-16 | B | TEI16 | revised |
| R4-2016833 | TR 37.716-21-11: Addition of missing lower order fallbacks | Nokia, AT&T | 38.101-1 | 0509 | 1 | Rel-16 | B | TEI16 | not pursued |
| R4-2014713 | Introduction of Tx diversity in tor 38101-1 | Qualcomm Incorporated | 38.101-1 | 0510 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2014718 | CR to TS38.101-1 on DC location correction | Samsung | 38.101-1 | 0511 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016781 | CR to TS38.101-1 on DC location correction | Samsung | 38.101-1 | 0511 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014719 | CR to TS38.101-1 on DC location correction | Samsung | 38.101-1 | 0512 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2014754 | CR on introduction of completed NR CA/DC combs with 4DL/2UL within FR1 | Samsung | 38.101-1 | 0513 | - | Rel-17 | B | NR\_CADC\_R17\_4BDL\_2BUL-Core | agreed |
| R4-2014802 | CR on Introduction of completed SUL band combinations into TS 38.101-1 | Huawei, HiSilicon | 38.101-1 | 0514 | - | Rel-17 | B | NR\_SUL\_combos\_R17-Core | agreed |
| R4-2014806 | CR on Introduction of completed 5 bands inter-band CA into TS 38.101-1 | Huawei, HiSilicon | 38.101-1 | 0515 | - | Rel-17 | B | NR\_CADC\_R17\_5BDL\_xBUL-Core | withdrawn |
| R4-2014891 | Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range | Apple Inc. | 38.101-1 | 0516 | - | Rel-16 | B | NR\_n48\_LTE\_48\_coex-Core | not pursued |
| R4-2014898 | Coexistence cleanup for 38.101-1 Rel15 | Apple Inc. | 38.101-1 | 0517 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014899 | Coexistence cleanup for 38.101-1 Rel16 | Apple Inc. | 38.101-1 | 0518 | - | Rel-16 | F | TEI16 | agreed |
| R4-2014905 | CR for TS 38.101-1: Correction to FR1 time mask for SRS antenna switching | Apple Inc. | 38.101-1 | 0519 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2014906 | CR for TS 38.101-1: Correction to FR1 time mask for SRS antenna switching | Apple Inc. | 38.101-1 | 0520 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2014916 | CR for TS 38.101-1: NR-U UE RF open requirements | Apple Inc. | 38.101-1 | 0521 | - | Rel-16 | F | NR\_unlic-Core | not pursued |
| R4-2014955 | CR to TS 38.101-1 on NR CA bandwidth classes for unlicensed spectrum (Rel-16) | ZTE Corporation | 38.101-1 | 0522 | - | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2016798 | CR to TS 38.101-1 on NR CA bandwidth classes for unlicensed spectrum (Rel-16) | ZTE Corporation | 38.101-1 | 0522 | 1 | Rel-16 | F | NR\_unlic-Core | not pursued |
| R4-2014956 | CR to TS 38.101-1 on operating bands for intra-band CA (Rel-16) | ZTE Corporation | 38.101-1 | 0523 | - | Rel-16 | F | NR\_RF\_FR1-Core | not pursued |
| R4-2014960 | CR to TS 38.101-1 on simplification for inter-band CA configuration | ZTE Corporation | 38.101-1 | 0524 | - | Rel-16 | F | TEI16 | revised |
| R4-2016937 | CR to TS 38.101-1 on simplification for inter-band CA configuration | ZTE Corporation | 38.101-1 | 0524 | 1 | Rel-16 | F | TEI16 | agreed |
| R4-2014972 | CR on TS38.101-1 for NR V2X | vivo | 38.101-1 | 0525 | - | Rel-16 | F | 5G\_V2X\_NRSL | agreed |
| R4-2015016 | CR to TS 38.101-1[R15]: Clarification of non-simultaneous Rx/Tx operation for CA\_n77-n79 and CA\_n78-n79 in TS 38.101-1. | NTT DOCOMO, INC. | 38.101-1 | 0526 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016789 | CR to TS 38.101-1[R15]: Clarification of non-simultaneous Rx/Tx operation for CA\_n77-n79 and CA\_n78-n79 in TS 38.101-1. | NTT DOCOMO, INC. | 38.101-1 | 0526 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2015017 | CR to TS 38.101-1[R16]: Clarification of non-simultaneous Rx/Tx operation for CA\_n77-n79 and CA\_n78-n79 in TS 38.101-1. | NTT DOCOMO, INC. | 38.101-1 | 0527 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2015029 | CR to TS 38.101-1: Correction on applicability of 4Rx requirements for CA | ZTE Corporation | 38.101-1 | 0528 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2015030 | CR to TS 38.101-1: Correction on applicability of 4Rx requirements for CA | ZTE Corporation | 38.101-1 | 0529 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2015031 | CR to TS 38.101-1: Correction on the Aggregated Channel Bandwidth | ZTE Corporation | 38.101-1 | 0530 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2015032 | CR to TS 38.101-1: Correction on the Aggregated Channel Bandwidth | ZTE Corporation | 38.101-1 | 0531 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2015033 | CR to TS38.101-1: Correction on the general requirement and configured transmitted power requirement for inter-band DC | ZTE Corporation | 38.101-1 | 0532 | - | Rel-16 | F | NR\_newRAT-Core | not pursued |
| R4-2015195 | CR to 38.101-1 Add requirement on the UL CA configurations with no DL interruption | China Telecom | 38.101-1 | 0533 | - | Rel-16 | F | NR\_RF\_FR1-Core | revised |
| R4-2016818 | CR to 38.101-1 Add requirement on the UL CA configurations with no DL interruption | China Telecom | 38.101-1 | 0533 | 1 | Rel-16 | F | NR\_RF\_FR1-Core | agreed |
| R4-2015299 | Editorial correction on section 5.2C to 38.101-1 R16 | Huawei, HiSilicon | 38.101-1 | 0534 | - | Rel-16 | F | TEI16 | agreed |
| R4-2015333 | CR on V2X bands reference table | OPPO | 38.101-1 | 0535 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2016805 | CR on V2X bands reference table | OPPO | 38.101-1 | 0535 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2015339 | CR on sum of power for multiple transmit connectors | OPPO | 38.101-1 | 0536 | - | Rel-16 | F | TEI16 | revised |
| R4-2016834 | CR on sum of power for multiple transmit connectors | OPPO | 38.101-1 | 0536 | 1 | Rel-16 | F | TEI16 | agreed |
| R4-2015341 | CR on TxD requirements | OPPO | 38.101-1 | 0537 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2015357 | draftCR to 38101-1 on introducing new SUL band n99 | Huawei,HiSilicon | 38.101-1 | 0538 | - | Rel-17 | B | NR\_SUL\_UL\_n24-Core | not pursued |
| R4-2015554 | CR on spurious emission about UE co-existence between band n40 and n41 | Huawei, HiSilicon, CMCC | 38.101-1 | 0539 | - | Rel-16 | F | NR\_RF\_FR1-Core | not pursued |
| R4-2015557 | CR for 38.101-1 to correct the notation of SUL band combinations in order to be aligned with 38.101-3 | Huawei, HiSilicon | 38.101-1 | 0540 | - | Rel-16 | F | NR\_SUL\_combos\_R16-Core | agreed |
| R4-2015559 | CR for 38.101-1 to adjust the structure of NR CA REFSENS | Huawei, HiSilicon | 38.101-1 | 0541 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2015560 | CR for 38.101-1 to adjust the structure of NR CA REFSENS (Rel-16) | Huawei, HiSilicon | 38.101-1 | 0542 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2015682 | CR to TS 38.101-1: introduction of NR band n13 | Huawei, HiSilicon | 38.101-1 | 0543 | - | Rel-17 | B | NR\_n13-Core | revised |
| R4-2016878 | CR to TS 38.101-1: introduction of NR band n13 | Huawei, HiSilicon | 38.101-1 | 0543 | 1 | Rel-17 | B | NR\_n13-Core | agreed |
| R4-2015699 | Reference measurement channels for 70 MHz CBW | Huawei, HiSilicon | 38.101-1 | 0544 | - | Rel-16 | F | TEI16 | agreed |
| R4-2015889 | CR to 38.101-1 Introduce band combination requirements for PC2 CA\_n1A-n78A | China Telecom, ZTE, Huawei, HiSilicon, CATT | 38.101-1 | 0545 | - | Rel-17 | B | NR\_SAR\_PC2\_interB\_SUL\_2BUL | agreed |
| R4-2015912 | Big CR to 38.101-1 - Additional Channel BW | Ericsson | 38.101-1 | 0546 | - | Rel-17 | B | NR\_bands\_R17\_BWs | revised |
| R4-2016860 | Big CR to 38.101-1 - Additional Channel BW | Ericsson | 38.101-1 | 0546 | 1 | Rel-17 | B | NR\_bands\_R17\_BWs | agreed |
| R4-2015914 | Correction to supported channel bandwidths per SUL\_n41A-n81A | Keysight Technologies UK Ltd | 38.101-1 | 0547 | - | Rel-16 | F | NR\_SUL\_combos\_R16-Core | agreed |
| R4-2015919 | CR introduction completed band combinations Rel-17 NR Intra-band - | Ericsson | 38.101-1 | 0548 | - | Rel-17 | B | NR\_CA\_R17\_Intra-Core | agreed |
| R4-2015922 | CR introduction completed band combinations NR Inter-band 4 bands CA - | Ericsson | 38.101-1 | 0549 | - | Rel-17 | B | NR\_CA\_R17\_4BDL\_1BUL-Core | agreed |
| R4-2015972 | Correction to the intra-cell guard band definition for wideband operation | Ericsson | 38.101-1 | 0550 | - | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2016797 | Correction to the intra-cell guard band definition for wideband operation | Ericsson | 38.101-1 | 0550 | 1 | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2017825 | Correction to the intra-cell guard band definition for wideband operation | Ericsson | 38.101-1 | 0550 | 2 | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2017845 | Correction to the intra-cell guard band definition for wideband operation | Ericsson | 38.101-1 | 0550 | 3 | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2015973 | Correction to CA bandwidth classes M, N and O | Ericsson | 38.101-1 | 0551 | - | Rel-16 | F | NR\_unlic-Core | not pursued |
| R4-2015974 | Correction to receiver requirements for shared spectrum channel access | Ericsson | 38.101-1 | 0552 | - | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2016800 | Correction to receiver requirements for shared spectrum channel access | Ericsson | 38.101-1 | 0552 | 1 | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2015975 | Modification of Pcmax for UL CA with uplink Tx switching capability | Ericsson | 38.101-1 | 0553 | - | Rel-16 | F | NR\_RF\_FR1-Core | not pursued |
| R4-2015998 | Correction to spurious co-existence requirements for n28 and n83 | Keysight Technologies UK Ltd | 38.101-1 | 0554 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2016041 | CR Removal of Band 10 protection 38101-1 Rel15 | Skyworks Solutions Inc. | 38.101-1 | 0555 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016042 | CR Correction to NS\_27 and Band 10 protection 38101-1 Rel16 | Skyworks Solutions Inc. | 38.101-1 | 0556 | - | Rel-16 | A | NR\_RF\_FR1\_enh-Core | agreed |
| R4-2016341 | CR for editorial corrections 38.101-1 | Ericsson | 38.101-1 | 0557 | - | Rel-16 | F | NR\_CA\_R16\_intra | revised |
| R4-2016989 | CR for editorial corrections 38.101-1 | Ericsson | 38.101-1 | 0557 | 1 | Rel-16 | F | NR\_CA\_R16\_intra | agreed |
| R4-2016436 | Removal of square brackets for 38.101-1 NR-U | Qualcomm Incorporated | 38.101-1 | 0558 | - | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2016799 | Removal of square brackets for 38.101-1 NR-U | Qualcomm Incorporated | 38.101-1 | 0558 | 1 | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2017837 | Removal of square brackets for 38.101-1 NR-U | Qualcomm Incorporated | 38.101-1 | 0558 | 2 | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2016442 | Replacement of void sub-clauses | Qualcomm Incorporated | 38.101-1 | 0559 | - | Rel-16 | D | NR\_newRAT-Core | not pursued |
| R4-2016835 | Replacement of void sub-clauses | Qualcomm Incorporated | 38.101-1 | 0559 | 1 | Rel-16 | D | NR\_newRAT-Core | withdrawn |
| R4-2016446 | Revised V2X FRC tables | Qualcomm Incorporated | 38.101-1 | 0560 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | not pursued |
| R4-2016447 | Revision of inter-band V2X con-currency table for V2X\_n71A\_n47A | Qualcomm Incorporated | 38.101-1 | 0561 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | not pursued |
| R4-2016451 | CR to for 38.101-1: CA uplink power clarification | T-Mobile USA | 38.101-1 | 0562 | - | Rel-16 | F | TEI16 | agreed |
| R4-2016458 | CR for 38.101-1: Editorial corrections | T-Mobile USA | 38.101-1 | 0563 | - | Rel-16 | D | TEI16 | agreed |
| R4-2016470 | CR for TS 38.101-3: correction CR for simultaneous Tx/Rx operation (R15) | Huawei, HiSilicon | 38.101-1 | 0564 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2016471 | CR for TS 38.101-1: correction CR for simultaneous Tx/Rx operation (R16) | Huawei, HiSilicon | 38.101-1 | 0565 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2016474 | draft CR for 38.101-1 NR V2X FRC | Huawei, HiSilicon | 38.101-1 | 0566 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2017822 | CR for 38.101-1 NR V2X FRC | Huawei, HiSilicon | 38.101-1 | 0566 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2016478 | CR for TS 38.101-1 Tx diversity requirements | Huawei, HiSilicon | 38.101-1 | 0567 | - | Rel-16 | B | TEI16 | not pursued |
| R4-2016481 | CR for TS 38.101-1: correction of Pi/2 BPSK | Huawei, HiSilicon | 38.101-1 | 0568 | - | Rel-16 | F | NR\_eMIMO-Core | not pursued |
| R4-2016813 | CR for TS 38.101-1: correction of Pi/2 BPSK | Huawei, HiSilicon | 38.101-1 | 0568 | 1 | Rel-16 | F | NR\_eMIMO-Core | withdrawn |
| R4-2016483 | CR for TS 38.101-1: harmonic MSD for CA\_n41-n79 | Huawei, HiSilicon | 38.101-1 | 0569 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2016836 | CR for TS 38.101-1: harmonic MSD for CA\_n41-n79 | Huawei, HiSilicon | 38.101-1 | 0569 | 1 | Rel-16 | F | TEI16 | withdrawn |
| R4-2016490 | CR for TS 38.101-1: correction of delta Tib for UE supporting multiple band combinations (R15) | Huawei, HiSilicon | 38.101-1 | 0570 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016491 | CR for TS 38.101-1: correction of delta Tib for UE supporting multiple band combinations (R16) | Huawei, HiSilicon | 38.101-1 | 0571 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2016494 | Update of configured transmitted power to remove ambiguity in TL,C (Rel-15) | Huawei, HiSilicon | 38.101-1 | 0572 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2016495 | Update of configured transmitted power to remove ambiguity in TL,C (Rel-16) | Huawei, HiSilicon | 38.101-1 | 0573 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2016513 | CR for intra-band UL CA non-contiguous CA requirement | Huawei, HiSilicon | 38.101-1 | 0574 | - | Rel-16 | B | NR\_RF\_FR1 | revised |
| R4-2016815 | CR for intra-band UL CA non-contiguous CA requirement | Huawei, HiSilicon, Nokia | 38.101-1 | 0574 | 1 | Rel-16 | B | NR\_RF\_FR1 | agreed |
| R4-2016517 | CR on TS 38.101-1 time mask for shorter transient | Huawei, HiSilicon | 38.101-1 | 0575 | - | Rel-16 | F | TEI6 | revised |
| R4-2016829 | CR on TS 38.101-1 time mask for shorter transient | Huawei, HiSilicon | 38.101-1 | 0575 | 1 | Rel-16 | F | TEI6 | not pursued |
| R4-2016521 | CR for TS 38.101-1 Pcmax | Huawei, HiSilicon | 38.101-1 | 0576 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2016522 | CR on TS 38.101-1 Pcmax | Huawei, HiSilicon | 38.101-1 | 0577 | - | Rel-16 | F | NR\_newRAT-Core | withdrawn |
| R4-2016525 | CR on channel space for CA | Huawei, HiSilicon | 38.101-1 | 0578 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2016526 | CR for 38.101-1 channel space for CA\_Rel16 | Huawei, HiSilicon | 38.101-1 | 0579 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2016534 | CR on correction for AMPR NS\_38,NS\_40 and NS\_41 | Huawei, HiSilicon | 38.101-1 | 0580 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016782 | CR on correction for AMPR NS\_38,NS\_40 and NS\_41 | Huawei, HiSilicon | 38.101-1 | 0580 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016535 | CR for 38.101-1 on corrections for AMPR-Rel-16 | Huawei, HiSilicon | 38.101-1 | 0581 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2016578 | CR to DMRS position in UL RMC for FR1 | Qualcomm Incorporated | 38.101-1 | 0582 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016783 | CR to DMRS position in UL RMC for FR1 | Qualcomm Incorporated | 38.101-1 | 0582 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016592 | Editorial CR to change | Qualcomm Incorporated | 38.101-1 | 0583 | - | Rel-16 | D | TEI16 | withdrawn |
| R4-2016993 | CR to DMRS position in UL RMC for FR1 | Qualcomm Incorporated | 38.101-1 | 0584 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2017805 | CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-1 | ZTE | 38.101-1 | 0585 | - | Rel-17 | B | NR\_CADC\_R17\_2BDL\_xBUL | agreed |
| R4-2017807 | CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-1 | ZTE | 38.101-1 | 0586 | - | Rel-17 | B | NR\_CADC\_R17\_3BDL\_2BUL | agreed |
| R4-2014054 | EESS protection related requirements for FR2 bands | Nokia, Nokia Shanghai Bell | 38.101-2 | 0262 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016785 | EESS protection related requirements for FR2 bands | Nokia, Nokia Shanghai Bell | 38.101-2 | 0262 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014055 | EESS protection related requirements for FR2 bands | Nokia, Nokia Shanghai Bell | 38.101-2 | 0263 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2014259 | CR to 38.101-2: Introduction of NS\_203 | Qualcomm Incorporated | 38.101-2 | 0264 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2014260 | CR to 38.101-2: Introduction of NS\_203 | Qualcomm Incorporated | 38.101-2 | 0265 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2014261 | CR to 38.101-2: ULCA clarifications | Qualcomm Incorporated | 38.101-2 | 0266 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014262 | CR to 38.101-2: ULCA clarifications | Qualcomm Incorporated | 38.101-2 | 0267 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2014404 | CR for TS38.101-2 Rel-15, Correction for definition of P-MPR | CATT | 38.101-2 | 0268 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014405 | CR for TS38.101-2 Rel-16, Correction for definition of P-MPR | CATT | 38.101-2 | 0269 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2014512 | REL16 eBC capability alingment with 38.306 | Nokia, Nokia Shanghai Bell | 38.101-2 | 0270 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | revised |
| R4-2016821 | REL16 eBC capability alingment with 38.306 | Nokia, Nokia Shanghai Bell | 38.101-2 | 0270 | 1 | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | agreed |
| R4-2014581 | CR to 38.101-2 (Rel-16) inter-band DL CA | Intel Corporation | 38.101-2 | 0271 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | revised |
| R4-2016825 | CR to 38.101-2 (Rel-16) inter-band DL CA | Intel Corporation | 38.101-2 | 0271 | 1 | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | agreed |
| R4-2014597 | Clarification of EIS spherical coverage for inter-band CA | Qualcomm Incorporated | 38.101-2 | 0272 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | revised |
| R4-2016826 | Clarification of EIS spherical coverage for inter-band CA | Qualcomm Incorporated | 38.101-2 | 0272 | 1 | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | agreed |
| R4-2014684 | Transmission gap for relative power tolerance in FR2 | Anritsu corporation | 38.101-2 | 0273 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014685 | Transmission gap for relative power tolerance in FR2 | Anritsu corporation | 38.101-2 | 0274 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2014720 | CR to TS38.101-2 on DC location correction | Samsung | 38.101-2 | 0275 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016786 | CR to TS38.101-2 on DC location correction | Samsung | 38.101-2 | 0275 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014721 | CR to TS38.101-2 on DC location correction | Samsung | 38.101-2 | 0276 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2014885 | CR for introduction of EESS protection applied after 2021 | NTT DOCOMO INC. | 38.101-2 | 0277 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2014886 | CR for introduction of EESS protection applied after 2021 | NTT DOCOMO INC. | 38.101-2 | 0278 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2014907 | CR for TS 38.101-2: Clarification for NS\_202 emission requirements | Apple Inc. | 38.101-2 | 0279 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014908 | CR for TS 38.101-2: Clarification for NS\_202 | Apple Inc. | 38.101-2 | 0280 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2014932 | CR for PSD imbalance for FR2 DL inter-band CA | NTT DOCOMO INC. | 38.101-2 | 0281 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | not pursued |
| R4-2014957 | CR to TS 38.101-2 on fallback group for intra-band contiguous CA (Rel-16) | ZTE Corporation | 38.101-2 | 0282 | - | Rel-16 | F | TEI16 | revised |
| R4-2016837 | CR to TS 38.101-2 on fallback group for intra-band contiguous CA (Rel-16) | ZTE Corporation | 38.101-2 | 0282 | 1 | Rel-16 | F | TEI16 | agreed |
| R4-2014961 | CR to TS 38.101-2 on simplification for inter-band CA configuration | ZTE Corporation | 38.101-2 | 0283 | - | Rel-16 | F | TEI16 | revised |
| R4-2016938 | CR to TS 38.101-2 on simplification for inter-band CA configuration | ZTE Corporation | 38.101-2 | 0283 | 1 | Rel-16 | F | TEI16 | agreed |
| R4-2015253 | CR for TS 38.101-3 switching period for V2X con-current operation | Xiaomi | 38.101-2 | 0284 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | withdrawn |
| R4-2015335 | CR on FR2 equal PSD in UL CA | OPPO | 38.101-2 | 0285 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2015336 | CR on FR2 equal PSD in UL CA (R16) | OPPO | 38.101-2 | 0286 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2015920 | CR introduction completed band combinations Rel-17 NR Intra-band - | Ericsson | 38.101-2 | 0287 | - | Rel-17 | B | NR\_CA\_R17\_Intra-Core | agreed |
| R4-2015970 | Correction to Pcmax: total radiated power | Ericsson | 38.101-2 | 0288 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2015971 | Correction to Pcmax: total radiated power | Ericsson | 38.101-2 | 0289 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2015979 | Correction to Pcmax: account of power prioritization rules for secondary cells | Ericsson | 38.101-2 | 0290 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2015980 | Correction to modified MPR behaviour | Ericsson | 38.101-2 | 0291 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2016031 | Correction to EIS definition | Rohde & Schwarz | 38.101-2 | 0292 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016788 | Correction to EIS definition | Rohde & Schwarz | 38.101-2 | 0292 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016032 | Correction to EIS definition | Rohde & Schwarz | 38.101-2 | 0293 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2016053 | Frequency separation class alignment | Ericsson | 38.101-2 | 0294 | - | Rel-16 | F | NR\_newRAT-Core | not pursued |
| R4-2016056 | Correction of transmission gap definition for Relative power tolerance | Ericsson | 38.101-2 | 0295 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2016057 | Correction of transmission gap definition for Relative power tolerance | Ericsson | 38.101-2 | 0296 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2016342 | CR for editorial corrections 38.101-2 | Ericsson | 38.101-2 | 0297 | - | Rel-16 | F | NR\_CA\_R16\_intra | revised |
| R4-2016838 | CR for editorial corrections 38.101-2 | Ericsson | 38.101-2 | 0297 | 1 | Rel-16 | F | NR\_CA\_R16\_intra | agreed |
| R4-2016459 | CR for 38.101-2: IBB and ACS corrections | T-Mobile USA | 38.101-2 | 0298 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016460 | Mirror CR for 38.101-2: IBB and ACS corrections | T-Mobile USA | 38.101-2 | 0299 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2016499 | CR to 38.101-2: Frequency separation class update | Qualcomm Incorporated | 38.101-2 | 0300 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2016518 | CR on beam correspondence side condition | Huawei, HiSilicon | 38.101-2 | 0301 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh | revised |
| R4-2016823 | CR on beam correspondence side condition | Huawei, HiSilicon | 38.101-2 | 0301 | 1 | Rel-16 | F | NR\_RF\_FR2\_req\_enh | not pursued |
| R4-2016519 | CR for inter-band NC DL CA Rrefsens | Huawei, HiSilicon | 38.101-2 | 0302 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh | revised |
| R4-2016828 | CR for inter-band NC DL CA Rrefsens | Huawei, HiSilicon | 38.101-2 | 0302 | 1 | Rel-16 | F | NR\_RF\_FR2\_req\_enh | not pursued |
| R4-2016520 | CR on FR2 intra-band NC DL CA refsens | Huawei, HiSilicon | 38.101-2 | 0303 | - | Rel-16 | A | NR\_RF\_FR2\_req\_enh | withdrawn |
| R4-2016527 | CR on channel space for CA | Huawei, HiSilicon | 38.101-2 | 0304 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2016528 | CR for 38.101-2 channel space for CA\_Rel16 | Huawei, HiSilicon | 38.101-2 | 0305 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2016579 | CR to DMRS position in UL RMC for FR2 | Qualcomm Incorporated | 38.101-2 | 0306 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016787 | CR to DMRS position in UL RMC for FR2 | Qualcomm Incorporated | 38.101-2 | 0306 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016590 | CR for intra-band NC DL CA Rrefsens | Huawei, HiSilicon | 38.101-2 | 0307 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2016593 | Editorial CR to change | Qualcomm Incorporated | 38.101-2 | 0308 | - | Rel-16 | D | TEI16 | withdrawn |
| R4-2016875 | CR for FR2 FWA RF requirements | Huawei | 38.101-2 | 0309 | - | Rel-17 | B | NR\_FR2\_FWA\_Bn257\_Bn258-Core | not pursued |
| R4-2017823 | CR to DMRS position in UL RMC for FR2 | Qualcomm Incorporated | 38.101-2 | 0310 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2014165 | CR CatF Cross Band Noise DC\_1\_n40\_highBW | Qualcomm | 38.101-3 | 0356 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2014166 | CR CatA Cross Band Noise DC\_1\_n40\_hignBW | Qualcomm | 38.101-3 | 0357 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2014169 | CR CatF Cross Band Noise DC\_3\_n1\_highBW | Qualcomm Incorporated | 38.101-3 | 0358 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2014306 | Introducing CR on new EN-DC LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17 | LG Electronics Polska | 38.101-3 | 0359 | - | Rel-17 | B | DC\_R17\_xBLTE\_2BNR\_yDL2UL | agreed |
| R4-2014309 | Clarification of additional spurious emission requirements on Inter-band EN-DC(R15) | SoftBank Corp. | 38.101-3 | 0360 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2014310 | Clarification of additional spurious emission requirements on Inter-band EN-DC(R16) | SoftBank Corp. | 38.101-3 | 0361 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2014318 | Correction on Additional ILs and MSD levels for DC\_20\_n38 UE | LG Electronics France, Huawei | 38.101-3 | 0362 | - | Rel-16 | F | TEI16 | revised |
| R4-2017818 | Correction on Additional ILs and MSD levels for DC\_20\_n38 UE | LG Electronics France, Huawei | 38.101-3 | 0362 | 1 | Rel-16 | F | TEI16 | agreed |
| R4-2014324 | Correction on 5G V2X inter-band con-current UE RF requirements in TS38.101-3 | LG Electronics France | 38.101-3 | 0363 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2016810 | Correction on 5G V2X inter-band con-current UE RF requirements in TS38.101-3 | LG Electronics France | 38.101-3 | 0363 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2014415 | CR for TS 38.101-3, Time mask for TDM operation between NR V2X and LTE V2X in ITS band | CATT | 38.101-3 | 0364 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2016808 | CR for TS 38.101-3, Time mask for TDM operation between NR V2X and LTE V2X in ITS band | CATT | 38.101-3 | 0364 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2014424 | CR for TS 38.101-3, Introduce new band combination of V2X\_39A-n47A, V2X\_n39A-47A, V2X\_40A-n47A and V2X\_n40A-47A | CATT | 38.101-3 | 0365 | - | Rel-17 | B | NR\_LTE\_V2X\_PC5\_combos | revised |
| R4-2016873 | CR for TS 38.101-3, Introduce new band combination of V2X\_39A-n47A, V2X\_n39A-47A, V2X\_40A-n47A and V2X\_n40A-47A | CATT | 38.101-3 | 0365 | 1 | Rel-17 | B | NR\_LTE\_V2X\_PC5\_combos | agreed |
| R4-2014463 | CR on Introducing NR inter-band CA for 3DL Bands and 1UL band for 38.101-3 | CATT | 38.101-3 | 0366 | - | Rel-17 | B | NR\_CA\_R17\_3BDL\_1BUL-Core | agreed |
| R4-2014582 | CR to 38.101-3 (Rel-16) error correntions to configurations for CA and DC | Intel Corporation | 38.101-3 | 0367 | - | Rel-16 | F | TEI16 | agreed |
| R4-2014596 | General corrections for V2X sections in 38.101-3 | Qualcomm Incorporated | 38.101-3 | 0368 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2016811 | General corrections for V2X sections in 38.101-3 | Qualcomm Incorporated | 38.101-3 | 0368 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2014682 | UL output power for spurious response and general Rx | Anritsu corporation, Apple Inc. | 38.101-3 | 0369 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014683 | UL output power for spurious response and general Rx | Anritsu corporation, Apple Inc. | 38.101-3 | 0370 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2014708 | Big CR on introduction of completed PC2 for EN-DC with 1 LTE band + 1 NR TDD band | China Unicom | 38.101-3 | 0371 | - | Rel-17 | B | ENDC\_UE\_PC2\_R17\_NR\_TDD-Core | agreed |
| R4-2014709 | Big CR on introduction of completed PC2 for EN-DC with 1 LTE band + 1 NR TDD band | China Unicom | 38.101-3 | 0372 | - | Rel-17 | B | ENDC\_UE\_PC2\_R17\_NR\_TDD-Core | withdrawn |
| R4-2014755 | CR on introduction of completed NR CA/DC combs with 4DL/2UL including FR2 | Samsung | 38.101-3 | 0373 | - | Rel-17 | B | NR\_CADC\_R17\_4BDL\_2BUL-Core | agreed |
| R4-2014782 | CR introduction completed band combinations for Dual Connectivity (DC) of 5 bands LTE inter-band CA (5DL/1UL) and 1 NR band (1DL/1UL) | Samsung | 38.101-3 | 0374 | - | Rel-17 | B | DC\_R17\_5BLTE\_1BNR\_6DL2UL-Core | agreed |
| R4-2014783 | CR introduction completed band combinations for Dual Connectivity (DC) of x bands (x=2,3,4) LTE inter-band CA (xDL/1UL) and 1 NR FR1 band (1DL/1UL) and 1 NR FR2 band (1DL/1UL) | Samsung | 38.101-3 | 0375 | - | Rel-17 | B | DC\_R17\_xBLTE\_2BNR\_yDL3UL-Core | agreed |
| R4-2014788 | Big CR for Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL) | CHTTL | 38.101-3 | 0376 | - | Rel-17 | B | DC\_R17\_1BLTE\_1BNR\_2DL2UL-Core | agreed |
| R4-2014803 | CR on Introduction of completed SUL band combinations into TS 38.101-3 | Huawei, HiSilicon | 38.101-3 | 0377 | - | Rel-17 | B | NR\_SUL\_combos\_R17-Core | agreed |
| R4-2014900 | Coexistence cleanup for 38.101-3 Rel15 | Apple Inc. | 38.101-3 | 0378 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2014901 | Coexistence cleanup for 38.101-3 Rel16 | Apple Inc. | 38.101-3 | 0379 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2014914 | CR for TS 38.101-3: Corrections for intra-band contiguous EN-DC configurations | Apple Inc. | 38.101-3 | 0380 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2014915 | CR for TS 38.101-3: Corrections for intra-band contiguous EN-DC configurations | Apple Inc. | 38.101-3 | 0381 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2014958 | CR to TS 38.101-3 on intra-band contiguous EN-DC BW class (Rel-16) | ZTE Corporation | 38.101-3 | 0382 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2014962 | CR to TS 38.101-3 on simplification for inter-band CA configuration between FR1 and FR2 | ZTE Corporation | 38.101-3 | 0383 | - | Rel-16 | F | TEI16 | revised |
| R4-2016939 | CR to TS 38.101-3 on simplification for inter-band CA configuration between FR1 and FR2 | ZTE Corporation | 38.101-3 | 0383 | 1 | Rel-16 | F | TEI16 | agreed |
| R4-2015034 | CR to TS 38.101-3: Some corrections on the ENDC | ZTE Corporation | 38.101-3 | 0384 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016991 | CR to TS 38.101-3: Some corrections on the ENDC | ZTE Corporation | 38.101-3 | 0384 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2015035 | CR to TS 38.101-3: Some corrections on the ENDC | ZTE Corporation | 38.101-3 | 0385 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2015196 | CR to 38.101-3: Add requirement on the inter-band EN-DC with no DL interruption | China Telecom | 38.101-3 | 0386 | - | Rel-16 | F | NR\_RF\_FR1-Core | revised |
| R4-2016819 | CR to 38.101-3: Add requirement on the inter-band EN-DC with no DL interruption | China Telecom | 38.101-3 | 0386 | 1 | Rel-16 | F | NR\_RF\_FR1-Core | agreed |
| R4-2015215 | CR to introduce new combinations of LTE 4band + NR 1band for TS 38.101-3 | Nokia, Nokia Shanghai Bell | 38.101-3 | 0387 | - | Rel-17 | B | DC\_R17\_4BLTE\_1BNR\_5DL2UL | agreed |
| R4-2015264 | CR to TS 38.101-3: corrections on ACS for intra-band contiguous EN-DC | Xiaomi | 38.101-3 | 0388 | - | Rel-16 | F | NR\_newRAT-Core | agreed |
| R4-2015267 | CR for TS 38.101-3 switching period for V2X con-current operation | Beijing Xiaomi Electronics | 38.101-3 | 0389 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | not pursued |
| R4-2015323 | Alignment of descritpion of the power class restriction for inter-band EN-DC | vivo | 38.101-3 | 0390 | - | Rel-16 | F | ENDC\_UE\_PC2\_TDD\_TDD | not pursued |
| R4-2015324 | Correction of delta Powerclass for Inter-band EN-DC | vivo, CMCC, China Unicom | 38.101-3 | 0391 | - | Rel-16 | F | ENDC\_UE\_PC2\_TDD\_TDD | agreed |
| R4-2015331 | CR on NR power class under EN-DC | OPPO | 38.101-3 | 0392 | - | Rel-16 | F | TEI16 | revised |
| R4-2016842 | CR on NR power class under EN-DC | OPPO | 38.101-3 | 0392 | 1 | Rel-16 | F | TEI16 | agreed |
| R4-2015337 | CR on simultaneous Tx-Rx for EN-DC | OPPO | 38.101-3 | 0393 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2015338 | CR on simultaneous Tx-Rx for EN-DC (R16 mirror CR) | OPPO | 38.101-3 | 0394 | - | Rel-16 | F | TEI16 | withdrawn |
| R4-2015706 | CR on introduction of completed EN-DC of 2 bands LTE and 1 band NR from RAN4#96e and RAN4#97e into TS 38.101-3 | Huawei, HiSilicon | 38.101-3 | 0395 | - | Rel-17 | B | DC\_R17\_2BLTE\_1BNR\_3DL2UL-Core | agreed |
| R4-2015729 | CR to TS 38.101-3 corrections on inter-band EN-DC configurations including FR1 and FR2 | CHTTL | 38.101-3 | 0396 | - | Rel-16 | F | DC\_R16\_xBLTE\_2BNR\_yDL2UL-Core | agreed |
| R4-2015796 | CR to correct MSD of DC\_1A-41A\_n77A | KDDI Corporation | 38.101-3 | 0397 | - | Rel-15 | F | NR\_newRAT | agreed |
| R4-2015797 | CR to correct MSD of DC\_1A-41A\_n77A | KDDI Corporation | 38.101-3 | 0398 | - | Rel-16 | F | TEI16 | agreed |
| R4-2015805 | Correction of CR0325 implementation | ETSI MCC | 38.101-3 | 0399 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2015921 | CR introduction completed band combinations LTE 3DL and one NR band - | Ericsson | 38.101-3 | 0400 | - | Rel-17 | B | DC\_R17\_3BLTE\_1BNR\_4DL2UL-Core | agreed |
| R4-2015923 | CR introduction completed band combinations NR Inter-band 4 bands CA - | Ericsson | 38.101-3 | 0401 | - | Rel-17 | B | NR\_CA\_R17\_4BDL\_1BUL-Core | agreed |
| R4-2015927 | CR to add NR-U EN-DC combinations | Ericsson, Charter Communication, T-Mobile US | 38.101-3 | 0402 | - | Rel-17 | B | NR\_CADC\_R17\_2BDL\_xBUL | revised |
| R4-2016801 | CR to add NR-U EN-DC combinations | Ericsson, Charter Communication, T-Mobile US | 38.101-3 | 0402 | 1 | Rel-17 | B | NR\_CADC\_R17\_2BDL\_xBUL | agreed |
| R4-2015977 | Correction of Pcmax for an NR PC2 UE supporting NR PC3 for EN-DC | Ericsson | 38.101-3 | 0403 | - | Rel-15 | F | TEI16 | not pursued |
| R4-2015981 | Verification of the P-MPR method for EN-DC FDD-TDD power class 2 | Ericsson | 38.101-3 | 0404 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2015992 | CR to TS 38.101-3 clarifications on indication of Single Uplink allowed for intra-band EN-DC and NE-DC | CHTTL | 38.101-3 | 0405 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2017821 | CR to TS 38.101-3 clarifications on indication of Single Uplink allowed for intra-band EN-DC and NE-DC | CHTTL | 38.101-3 | 0405 | 1 | Rel-15 | F | NR\_newRAT-Core | withdrawn |
| R4-2015999 | CR to TS 38.101-3 clarifications on indication of Single Uplink allowed for intra-band EN-DC and NE-DC | CHTTL | 38.101-3 | 0406 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2016054 | Correction of p-Max I.E and corresponding references | Ericsson | 38.101-3 | 0407 | - | Rel-16 | A | NR\_newRAT-Core | not pursued |
| R4-2016793 | Correction of p-Max I.E and corresponding references | Ericsson | 38.101-3 | 0407 | 1 | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2016055 | Correction of p-Max I.E and corresponding references | Ericsson | 38.101-3 | 0408 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2016792 | Correction of p-Max I.E and corresponding references | Ericsson | 38.101-3 | 0408 | 1 | Rel-15 | F | NR\_newRAT-Core | withdrawn |
| R4-2016225 | Correction of applicability of 2Rx requirements | vivo | 38.101-3 | 0409 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016990 | Correction of applicability of 2Rx requirements | vivo | 38.101-3 | 0409 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016226 | CR to TS38.101-3[R16] Applicability of 2Rx requirements | vivo | 38.101-3 | 0410 | - | Rel-16 | A | NR\_newRAT-Core | revised |
| R4-2017826 | CR to TS38.101-3[R16] Applicability of 2Rx requirements | vivo | 38.101-3 | 0410 | 1 | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2016238 | CR 38101-3 R15 Band 10 protection and DC\_42\_n79 correction | Skyworks Solutions Inc. | 38.101-3 | 0411 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016790 | CR 38101-3 R15 Band 10 protection and DC\_42\_n79 correction | Skyworks Solutions Inc. | 38.101-3 | 0411 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016241 | CR 38101-3 R16 Band 10 protection and DC\_42\_n79 correction | Skyworks Solutions Inc. | 38.101-3 | 0412 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2016343 | CR for editorial corrections 38.101-3 | Ericsson | 38.101-3 | 0413 | - | Rel-16 | F | DC\_R16\_1BLTE\_1BNR\_2DL2UL-Core | revised |
| R4-2016843 | CR for editorial corrections 38.101-3 | Ericsson | 38.101-3 | 0413 | 1 | Rel-16 | F | DC\_R16\_1BLTE\_1BNR\_2DL2UL-Core | agreed |
| R4-2016435 | Correction to PCMAX for contiguous intra-band EN-DC | Qualcomm Incorporated | 38.101-3 | 0414 | - | Rel-16 | F | NR\_newRAT-Core | revised |
| R4-2016845 | Correction to PCMAX for contiguous intra-band EN-DC | Qualcomm Incorporated | 38.101-3 | 0414 | 1 | Rel-16 | F | NR\_newRAT-Core | agreed |
| R4-2016472 | CR for TS 38.101-3: correction CR for simultaneous Tx/Rx operation (R15) | Huawei, HiSilicon | 38.101-3 | 0415 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2016473 | CR for TS 38.101-3: correction CR for simultaneous Tx/Rx operation (R16) | Huawei, HiSilicon | 38.101-3 | 0416 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2016476 | draft correction CR for TS 38.101-3: NR V2X con-current operation | Huawei, HiSilicon | 38.101-3 | 0417 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | not pursued |
| R4-2016482 | CR for TS 38.101-3: correction of power class for EN-DC | Huawei, HiSilicon | 38.101-3 | 0418 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2016485 | CR for 38.101-3 Correction on EN-DC synchronous carriers (R15) | Huawei, HiSilicon | 38.101-3 | 0419 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016794 | CR for 38.101-3 Correction on EN-DC synchronous carriers (R15) | Huawei, HiSilicon | 38.101-3 | 0419 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016486 | CR for 38.101-3 Correction on EN-DC synchronous carriers (R16) | Huawei, HiSilicon | 38.101-3 | 0420 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2016492 | CR for TS 38.101-3: correction of delta Tib for UE supporting multiple band combinations (R15) | Huawei, HiSilicon | 38.101-3 | 0421 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2016493 | CR for TS 38.101-3: correction of delta Tib for UE supporting multiple band combinations (R16) | Huawei, HiSilicon | 38.101-3 | 0422 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2016496 | CR for TS 38.101-3: correction of spurious emission band UE co-existence (R15) | Huawei, HiSilicon | 38.101-3 | 0423 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016791 | CR for TS 38.101-3: correction of spurious emission band UE co-existence (R15) | Huawei, HiSilicon | 38.101-3 | 0423 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016497 | CR for TS 38.101-3: correction of spurious emission band UE co-existence (R16) | Huawei, HiSilicon | 38.101-3 | 0424 | - | Rel-16 | F | NR\_newRAT-Core | revised |
| R4-2017816 | CR for TS 38.101-3: correction of spurious emission band UE co-existence (R16) | Huawei, HiSilicon | 38.101-3 | 0424 | 1 | Rel-16 | F | NR\_newRAT-Core | agreed |
| R4-2016498 | Adding delta TIB requirement for DC\_2-7-7-13\_n66 | Huawei, HiSilicon | 38.101-3 | 0425 | - | Rel-16 | F | NR\_newRAT-Core | revised |
| R4-2016844 | Adding delta TIB requirement for DC\_2-7-7-13\_n66 | Huawei, HiSilicon | 38.101-3 | 0425 | 1 | Rel-16 | F | NR\_newRAT-Core | agreed |
| R4-2017806 | CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-3 | ZTE | 38.101-3 | 0426 | - | Rel-17 | B | NR\_CADC\_R17\_2BDL\_xBUL | not concluded |
| R4-2017808 | CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-3 | ZTE | 38.101-3 | 0427 | - | Rel-17 | B | NR\_CADC\_R17\_3BDL\_2BUL | agreed |
| R4-2017809 | CR to reflect the completed DC combinations for 3 bands DL with 3 bands UL into TS 38.101-3 | ZTE | 38.101-3 | 0428 | - | Rel-17 | B | DC\_R17\_xBLTE\_yBNR\_3DL3UL | agreed |
| R4-2017810 | CR to reflect the completed Dual Connectivity (DC) of x bands (x=1,2,3) LTE inter-band CA (xDL1UL) and 3 bands NR inter-band CA (3DL1UL) | ZTE | 38.101-3 | 0429 | - | Rel-17 | B | DC\_R17\_xBLTE\_3BNR\_yDL2UL | agreed |
| R4-2014015 | Update of Noc for NR operating bands in FR2 | ANRITSU LTD | 38.101-4 | 0079 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014016 | Update of Noc for NR operating bands in FR2 | ANRITSU LTD | 38.101-4 | 0080 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014050 | Correction to FR1 Aperiodic CSI Reporting | ANRITSU LTD | 38.101-4 | 0081 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014051 | Correction to FR1 Aperiodic CSI Reporting | ANRITSU LTD | 38.101-4 | 0082 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014052 | Correction to FR2 PMI Aperiodic CSI Reporting | ANRITSU LTD | 38.101-4 | 0083 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014053 | Correction to FR2 PMI Aperiodic CSI Reporting | ANRITSU LTD | 38.101-4 | 0084 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014243 | CR on requirements with slot aggreagation in FR2 | Apple | 38.101-4 | 0085 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017514 | CR on requirements with slot aggregation in FR2 | Apple | 38.101-4 | 0085 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2014412 | CR for TS38.101-4, test for PDCCH DCI format 2\_6 demodulation | CATT | 38.101-4 | 0086 | - | Rel-16 | B | NR\_UE\_pow\_sav-Perf | not pursued |
| R4-2014420 | CR for 38.101-1: Introduce PSBCH performance requirements for NR V2X | CATT | 38.101-4 | 0087 | - | Rel-16 | B | 5G\_V2X\_NRSL-Perf | postponed |
| R4-2014550 | Draft CR on FRC for Normal NR CA demodulation requirements | Intel Corporation | 38.101-4 | 0088 | - | Rel-16 | B | NR\_perf\_enh-Perf | agreed |
| R4-2014559 | CR to TS 38.101-4: Performance requirements single-DCI based multi-TRP Repetition Tx schemes | Intel Corporation | 38.101-4 | 0089 | - | Rel-16 | B | NR\_eMIMO-Perf | revised |
| R4-2017534 | CR to TS 38.101-4: Performance requirements single-DCI based multi-TRP Repetition Tx schemes | Intel Corporation | 38.101-4 | 0089 | 1 | Rel-16 | B | NR\_eMIMO-Perf | endorsed |
| R4-2014562 | CR to TS 38.101-4: HST-SFN FDD performance requirements | Intel Corporation | 38.101-4 | 0090 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017542 | CR to TS 38.101-4: HST-SFN FDD performance requirements | Intel Corporation | 38.101-4 | 0090 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2014563 | CR to TS 38.101-4: Propagation conditions for HST scenarios | Intel Corporation | 38.101-4 | 0091 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017539 | CR to TS 38.101-4: Propagation conditions for HST scenarios | Intel Corporation | 38.101-4 | 0091 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2014690 | CR on HST-SFN requirements for TDD | CMCC | 38.101-4 | 0092 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017541 | CR on HST-SFN requirements for TDD | CMCC | 38.101-4 | 0092 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2014729 | Introduction of NR PDSCH FR1 CA 2Rx performance requirements | CMCC | 38.101-4 | 0093 | - | Rel-16 | B | NR\_perf\_enh-Perf | revised |
| R4-2017567 | Introduction of NR PDSCH FR1 CA 2Rx performance requirements | CMCC | 38.101-4 | 0093 | 1 | Rel-16 | B | NR\_perf\_enh-Perf | agreed |
| R4-2015318 | CR: FR1 EN-DC power imbalance requirements | NTT DOCOMO, INC, SoftBank Corp. | 38.101-4 | 0094 | - | Rel-16 | B | NR\_perf\_enh-Perf | revised |
| R4-2017571 | CR: FR1 EN-DC power imbalance requirements | NTT DOCOMO, INC, SoftBank Corp. | 38.101-4 | 0094 | 1 | Rel-16 | B | NR\_perf\_enh-Perf | agreed |
| R4-2015596 | CR on applicability and FRC for PDSCH normal demodulation for DL 256QAM for FR2 | Huawei, HiSilicon | 38.101-4 | 0095 | - | Rel-16 | B | NR\_DL256QAM\_FR2-Perf | endorsed |
| R4-2015598 | CR on SDR requirements for DL 256QAM for FR2 | Huawei, HiSilicon | 38.101-4 | 0096 | - | Rel-16 | B | NR\_DL256QAM\_FR2-Perf | revised |
| R4-2017538 | CR on SDR requirements for DL 256QAM for FR2 | Huawei, HiSilicon | 38.101-4 | 0096 | 1 | Rel-16 | B | NR\_DL256QAM\_FR2-Perf | endorsed |
| R4-2015603 | CR on HST DPS requirements | Huawei, HiSilicon | 38.101-4 | 0097 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017540 | CR on HST DPS requirements | Huawei, HiSilicon | 38.101-4 | 0097 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2015606 | CR on HST single-tap and HST multi-path fading requirements | Huawei, HiSilicon | 38.101-4 | 0098 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017545 | CR on HST single-tap and HST multi-path fading requirements | Huawei, HiSilicon | 38.101-4 | 0098 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2015607 | CR on applicability rules for HST scenarios | Huawei, HiSilicon | 38.101-4 | 0099 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017548 | CR on applicability rules for HST scenarios | Huawei, HiSilicon | 38.101-4 | 0099 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2015620 | CR to TS 38.101-4: Addition of UE performance requirements for FR1 URLLC PDSCH repetitions over multiple slots | Huawei, HiSilicon | 38.101-4 | 0100 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017511 | CR to TS 38.101-4: Addition of UE performance requirements for FR1 URLLC PDSCH repetitions over multiple slots | Huawei, HiSilicon | 38.101-4 | 0100 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015621 | CR to TS 38.101-4: Applicability rules for URLLC CSI requirements | Huawei, HiSilicon | 38.101-4 | 0101 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017498 | CR to TS 38.101-4: Applicability rules for URLLC CSI requirements | Huawei, HiSilicon | 38.101-4 | 0101 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | postponed |
| R4-2015622 | CR to TS 38.101-4: Applicability rules for URLLC UE demodulation requirements | Huawei, HiSilicon | 38.101-4 | 0102 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017515 | CR to TS 38.101-4: Applicability rules for URLLC UE demodulation requirements | Huawei, HiSilicon | 38.101-4 | 0102 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015656 | CR: Introduction of performance requirements for NR FR1 PDSCH CA with 4Rx | Huawei, HiSilicon | 38.101-4 | 0103 | - | Rel-16 | B | NR\_perf\_enh-Perf | revised |
| R4-2017568 | CR: Introduction of performance requirements for NR FR1 PDSCH CA with 4Rx | Huawei, HiSilicon | 38.101-4 | 0103 | 1 | Rel-16 | B | NR\_perf\_enh-Perf | agreed |
| R4-2015659 | CR for TS 38.101-4: Applicability for NR PMI requirements with Tx ports larger than 8 and up to 32 | Huawei, HiSilicon | 38.101-4 | 0104 | - | Rel-16 | B | NR\_perf\_enh-Perf | endorsed |
| R4-2015661 | CR: Addition of power imbalance requirements for intra-band contiguous CA and intra-band EN-DC | Huawei, HiSilicon | 38.101-4 | 0105 | - | Rel-16 | B | NR\_perf\_enh-Perf | revised |
| R4-2017572 | CR: Addition of power imbalance requirements for intra-band contiguous CA and intra-band EN-DC | Huawei, HiSilicon | 38.101-4 | 0105 | 1 | Rel-16 | B | NR\_perf\_enh-Perf | agreed |
| R4-2015824 | CR: Correction of FRC for PDSCH demodulation requirements | Ericsson | 38.101-4 | 0106 | - | Rel-15 | F | NR\_newRAT-Perf | not pursued |
| R4-2017447 | CR: Correction of FRC for PDSCH demodulation requirements | Ericsson | 38.101-4 | 0106 | 1 | Rel-15 | F | NR\_newRAT-Perf | withdrawn |
| R4-2015825 | CR: Correction of FRC for PDSCH demodulation requirements | Ericsson | 38.101-4 | 0107 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2016003 | CR on Applicability rules for Normal NR CA demodulation requirements | Intel Corporation | 38.101-4 | 0108 | - | Rel-16 | B | NR\_perf\_enh-Perf | revised |
| R4-2017566 | CR on Applicability rules for Normal NR CA demodulation requirements | Intel Corporation | 38.101-4 | 0108 | 1 | Rel-16 | B | NR\_perf\_enh-Perf | agreed |
| R4-2016004 | CR on FRC for UE Ultra-low BLER requirements | Intel Corporation | 38.101-4 | 0109 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2017496 | CR on FRC for UE Ultra-low BLER requirements | Intel Corporation | 38.101-4 | 0109 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | withdrawn |
| R4-2016005 | CR on FRC for UE Higher BLER requirements | Intel Corporation | 38.101-4 | 0110 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017512 | CR on FRC for UE Higher BLER requirements | Intel Corporation | 38.101-4 | 0110 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2016106 | CR to TS 38.101-4: Performance requirements for URLLC High BLER feature tests | Ericsson | 38.101-4 | 0111 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017513 | CR to TS 38.101-4: Performance requirements for URLLC High BLER feature tests | Ericsson | 38.101-4 | 0111 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2016107 | CR to TS 38.101-4: Performance requirements for URLLC PDSCH 0.001% BLER | Ericsson | 38.101-4 | 0112 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017497 | CR to TS 38.101-4: Performance requirements for URLLC PDSCH 0.001% BLER | Ericsson | 38.101-4 | 0112 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2016108 | CR to TS38.101-4: Addition of Rel-16 HST FRCs | Ericsson | 38.101-4 | 0113 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017546 | CR to TS38.101-4: Addition of Rel-16 HST FRCs | Ericsson | 38.101-4 | 0113 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2016375 | Draft CR on CQI reporting requirements with Table 3 | Apple | 38.101-4 | 0114 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017499 | Draft CR on CQI reporting requirements with Table 3 | Apple | 38.101-4 | 0114 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | postponed |
| R4-2016376 | Draft CR on Applicability of CQI reporting requirements with Table 3 | Apple | 38.101-4 | 0115 | - | Rel-16 | F | NR\_L1enh\_URLLC-Perf | not pursued |
| R4-2016424 | CR: Updates to OCNG pattern reference | Huawei Technologies Sweden AB | 38.101-4 | 0116 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017448 | CR: Updates to OCNG pattern reference | Huawei Technologies Sweden AB | 38.101-4 | 0116 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2016425 | CR: Updates OCNG pattern reference (Rel-16) | Huawei Technologies Sweden AB | 38.101-4 | 0117 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2016448 | CR: Correction on OCNG pattern | Qualcomm, Inc. | 38.101-4 | 0118 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017449 | CR: Correction on OCNG pattern | Qualcomm, Inc. | 38.101-4 | 0118 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2016449 | CR: Correction on OCNG pattern | Qualcomm, Inc. | 38.101-4 | 0119 | - | Rel-16 | A | NR\_newRAT-Perf | revised |
| R4-2017450 | CR: Correction on OCNG pattern | Qualcomm, Inc. | 38.101-4 | 0119 | 1 | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2016500 | CR on FDD HST Single-Tap and Multipath Fading Requirements | Qualcomm Incorporated | 38.101-4 | 0120 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017547 | CR on FDD HST Single-Tap and Multipath Fading Requirements | Qualcomm Incorporated | 38.101-4 | 0120 | 1 | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017682 | CR on FDD HST Single-Tap and Multipath Fading Requirements | Qualcomm Incorporated | 38.101-4 | 0120 | 2 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2016504 | CR on FR1 PDSCH Mapping Type B and Processing Capability 2 Requirements | Qualcomm Incorporated | 38.101-4 | 0121 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017516 | CR on FR1 PDSCH Mapping Type B and Processing Capability 2 Requirements | Qualcomm Incorporated | 38.101-4 | 0121 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017665 | CR on FR1 PDSCH Mapping Type B and Processing Capability 2 Requirements | Qualcomm Incorporated | 38.101-4 | 0121 | 2 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2016512 | CR on FR2 PDSCH CA Requirements | Qualcomm Incorporated | 38.101-4 | 0122 | - | Rel-16 | B | NR\_perf\_enh-Perf | agreed |
| R4-2017660 | CR to TS 38.101-4: on gamma values for SP Type I PMI requirements | Ericsson | 38.101-4 | 0123 | - | Rel-16 | F | NR\_perf\_enh-Perf | agreed |
| R4-2014328 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | 38.104 | 0214 | 2 | Rel-17 | B | DSS\_LTE\_B40\_NR\_Bn40-Core | revised |
| R4-2016943 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | 38.104 | 0214 | 3 | Rel-17 | B | DSS\_LTE\_B40\_NR\_Bn40-Core | agreed |
| R4-2014331 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.104 | CMCC, Huawei, HiSilicon | 38.104 | 0240 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | agreed |
| R4-2014342 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.104 | CMCC, Huawei, HiSilicon | 38.104 | 0241 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | agreed |
| R4-2015091 | CR for 38.104: HST PUSCH demodulation requirements | Nokia, Nokia Shanghai Bell | 38.104 | 0242 | - | Rel-16 | F | NR\_HST-Perf | revised |
| R4-2017552 | CR for 38.104: HST PUSCH demodulation requirements | Nokia, Nokia Shanghai Bell | 38.104 | 0242 | 1 | Rel-16 | F | NR\_HST-Perf | agreed |
| R4-2015096 | CR for 38.104: Ultra high reliability BS demodulation requirements | Nokia, Nokia Shanghai Bell | 38.104 | 0243 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017503 | CR for 38.104: Ultra high reliability BS demodulation requirements | Nokia, Nokia Shanghai Bell | 38.104 | 0243 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015097 | CR for 38.104: Low latency BS demodulation requirements | Nokia, Nokia Shanghai Bell | 38.104 | 0244 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017524 | CR for 38.104: Low latency BS demodulation requirements | Nokia, Nokia Shanghai Bell | 38.104 | 0244 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015177 | Draft CR to TS 38.104 BS demodulation requirements for 2-step RACH | ZTE Wistron Telecom AB | 38.104 | 0245 | - | Rel-16 | B | NR\_2step\_RACH-Perf | not pursued |
| R4-2017635 | CR to TS 38.104 BS demodulation requirements for 2-step RACH | ZTE Wistron Telecom AB | 38.104 | 0245 | 1 | Rel-16 | B | NR\_2step\_RACH-Perf | revised |
| R4-2017666 | CR to TS 38.104 BS demodulation requirements for 2-step RACH | ZTE Wistron Telecom AB | 38.104 | 0245 | 2 | Rel-16 | B | NR\_2step\_RACH-Perf | agreed |
| R4-2015358 | draftCR to 38104 on introducing new SUL band n99 | Huawei,HiSilicon | 38.104 | 0246 | - | Rel-17 | B | NR\_SUL\_UL\_n24-Core | not pursued |
| R4-2015371 | CR to TS 38.104 with NR-U remaining open issues updates | Nokia, Nokia Shanghai Bell | 38.104 | 0247 | - | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2017462 | CR to TS 38.104 with NR-U remaining open issues updates | Nokia, Nokia Shanghai Bell | 38.104 | 0247 | 1 | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2015612 | CR on BS demodulation requirements for 2-step RACH for FR2 | Huawei, HiSilicon | 38.104 | 0248 | - | Rel-16 | B | NR\_2step\_RACH-Perf | revised |
| R4-2017636 | CR on BS demodulation requirements for 2-step RACH for FR2 | Huawei, HiSilicon | 38.104 | 0248 | 1 | Rel-16 | B | NR\_2step\_RACH-Perf | agreed |
| R4-2015623 | CR to TS 38.104: Addition of BS performance requirements for URLLC PUSCH repetition Type A | Huawei, HiSilicon | 38.104 | 0249 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017527 | CR to TS 38.104: Addition of BS performance requirements for URLLC PUSCH repetition Type A | Huawei, HiSilicon | 38.104 | 0249 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015664 | CR for 38.104: Introduction of performance requirements for NR HST PRACH under fading channel | Huawei, HiSilicon | 38.104 | 0250 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017554 | CR for 38.104: Introduction of performance requirements for NR HST PRACH under fading channel | Huawei, HiSilicon | 38.104 | 0250 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2015665 | CR for 38.141-1: Introduction of conformance testing for NR HST PRACH under fading channel | Huawei, HiSilicon | 38.104 | 0251 | - | Rel-16 | B | NR\_HST-Perf | withdrawn |
| R4-2015666 | CR for 38.141-2: Introduction of conformance testing for NR HST PRACH under fading channel | Huawei, HiSilicon | 38.104 | 0252 | - | Rel-16 | B | NR\_HST-Perf | withdrawn |
| R4-2015684 | CR to TS 38.104: introduction of NR band n13 | Huawei, HiSilicon | 38.104 | 0253 | - | Rel-17 | B | NR\_n13-Core | agreed |
| R4-2015698 | CR for TS 38.104: Corrections for NR-U | Huawei, HiSilicon | 38.104 | 0254 | - | Rel-16 | F | NR\_unlic-Core | not pursued |
| R4-2015726 | CR to TS 38.104: Removal of | Ericsson | 38.104 | 0255 | - | Rel-16 | F | NR\_unlic-Core | not pursued |
| R4-2015843 | Adding MCS12 and 30% throughput requirements and corresponding FRC tables for FR2 PUSCH performance in TS38.104 v15.11.0 | Ericsson | 38.104 | 0256 | - | Rel-15 | B | NR\_newRAT-Perf | not pursued |
| R4-2015845 | Adding FRC table description in Annex in TS38.104 v16.5.0 | Ericsson | 38.104 | 0257 | - | Rel-16 | F | NR\_perf\_enh-Perf | revised |
| R4-2017574 | Adding FRC table description in Annex in TS38.104 v16.5.0 | Ericsson | 38.104 | 0257 | 1 | Rel-16 | F | NR\_perf\_enh-Perf | agreed |
| R4-2015911 | Big CR to 38.104 - Additional Channel BW | Ericsson | 38.104 | 0258 | - | Rel-17 | B | NR\_bands\_R17\_BWs | revised |
| R4-2016859 | Big CR to 38.104 - Additional Channel BW | Ericsson | 38.104 | 0258 | 1 | Rel-17 | B | NR\_bands\_R17\_BWs | agreed |
| R4-2016125 | CR to 38.104: Corrections on NR-U BS RF requirements | ZTE Corporation | 38.104 | 0259 | - | Rel-16 | F | NR\_unlic-Core | not pursued |
| R4-2016345 | CR to 38.104 on Category B OTA spurious emissions for Band n257 | Ericsson | 38.104 | 0260 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016346 | CR to 38.104 on Category B OTA spurious emissions for and n257 | Ericsson | 38.104 | 0261 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2015102 | CR to TS 38.113 on Voltage dips and interruptions, Release 15 | Ericsson | 38.113 | 0023 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017437 | CR to TS 38.113 on Voltage dips and interruptions, Release 15 | Ericsson | 38.113 | 0023 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015103 | CR to TS 38.113 on Voltage dips and interruptions, Release 16 | Ericsson | 38.113 | 0024 | - | Rel-16 | A | NR\_newRAT-Perf | revised |
| R4-2017438 | CR to TS 38.113 on Voltage dips and interruptions, Release 16 | Ericsson | 38.113 | 0024 | 1 | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015104 | CR to TS 38.113 on Performance criteria for transient phenomena, Release 15 | Ericsson | 38.113 | 0025 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017439 | CR to TS 38.113 on Performance criteria for transient phenomena, Release 15 | Ericsson | 38.113 | 0025 | 1 | Rel-15 | F | NR\_newRAT-Perf | not pursued |
| R4-2015105 | CR to TS 38.113 on Performance criteria for transient phenomena, Release 16 | Ericsson | 38.113 | 0026 | - | Rel-16 | A | NR\_newRAT-Perf | not pursued |
| R4-2017440 | CR to TS 38.113 on Performance criteria for transient phenomena, Release 16 | Ericsson | 38.113 | 0026 | 1 | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2015568 | CR to TS 38.113 correcting Exclusion Bands Title, Release 15 | Ericsson Inc. | 38.113 | 0027 | - | Rel-15 | D | NR\_newRAT-Core | not pursued |
| R4-2015569 | CR to TS 38.113 correcting Exclusion Bands Title, Release 16 | Ericsson Inc. | 38.113 | 0028 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2015958 | CR to TS 38.113: correction of the scope and other technical improvements, Rel-15 | Huawei | 38.113 | 0029 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2017441 | CR to TS 38.113: correction of the scope and other technical improvements, Rel-15 | Huawei | 38.113 | 0029 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2015959 | CR to TS 38.113: correction of the scope and other technical improvements, Rel-16 | Huawei | 38.113 | 0030 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2014188 | CR on scheduling restriction for CSI-RS based intra-frequency measurement | Qualcomm CDMA Technologies | 38.133 | 1108 | 2 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | revised |
| R4-2017316 | CR on scheduling restriction for CSI-RS based intra-frequency measurement | Qualcomm CDMA Technologies | 38.133 | 1108 | 3 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | revised |
| R4-2017349 | CR on scheduling restriction for CSI-RS based intra-frequency measurement | Qualcomm CDMA Technologies | 38.133 | 1108 | 4 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2014017 | RB allocation and Noc level in RLM Test cases | ANRITSU LTD | 38.133 | 1118 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017044 | RB allocation and Noc level in RLM Test cases | ANRITSU LTD | 38.133 | 1118 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014018 | RB allocation and Noc level in RLM Test cases | ANRITSU LTD | 38.133 | 1119 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014019 | Update FR2 event-triggered reporting Test cases in A.5.6, A.7.6 | ANRITSU LTD | 38.133 | 1120 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014020 | Update FR2 event-triggered reporting Test cases in A.5.6, A.7.6 | ANRITSU LTD | 38.133 | 1121 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014021 | 240kHz SSB SCS Configuration for FR2 SS-RSRP Test cases | ANRITSU LTD | 38.133 | 1122 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014022 | 240kHz SSB SCS Configuration for FR2 SS-RSRP Test cases | ANRITSU LTD | 38.133 | 1123 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014023 | Correct UE beam assumption for Test Cases in A.5.6 | ANRITSU LTD | 38.133 | 1124 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017045 | Correct UE beam assumption for Test Cases in A.5.6 | ANRITSU LTD | 38.133 | 1124 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014024 | Correct UE beam assumption for Test Cases in A.5.6 | ANRITSU LTD | 38.133 | 1125 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014026 | Aggregation level of CORESET for RMC scheduling | ANRITSU LTD | 38.133 | 1126 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017042 | Aggregation level of CORESET for RMC scheduling | ANRITSU LTD | 38.133 | 1126 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014027 | Aggregation level of CORESET for RMC scheduling | ANRITSU LTD | 38.133 | 1127 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014028 | Clarify FR1 NSA SS-SINR measurement TCs | ANRITSU LTD | 38.133 | 1128 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014029 | Claify FR1 NSA SS-SINR measurement TCs | ANRITSU LTD | 38.133 | 1129 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014046 | FR1 Inter-frequency Event triggered Reporting tests in DRX | ANRITSU LTD | 38.133 | 1130 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014047 | FR1 Inter-frequency Event triggered Reporting tests in DRX | ANRITSU LTD | 38.133 | 1131 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014048 | E-UTRAN | ANRITSU LTD | 38.133 | 1132 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014049 | E-UTRAN | ANRITSU LTD | 38.133 | 1133 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014181 | [CR] NR Perf Maintenance R15 Cat F | ZTE Corporation | 38.133 | 1134 | - | Rel-15 | F | NR\_newRAT-Perf | withdrawn |
| R4-2014182 | [CR] NR Perf Maintenance R16 Cat A | ZTE Corporation | 38.133 | 1135 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2014183 | [CR] NR Perf Maintenance R16 Cat F | ZTE Corporation | 38.133 | 1136 | - | Rel-16 | F | NR\_newRAT-Perf | withdrawn |
| R4-2014221 | CR for HST intra-frequency measurement requirements | Apple | 38.133 | 1137 | - | Rel-16 | F | NR\_HST-Core | merged |
| R4-2014223 | CR for DAPS HO test applicability | Apple | 38.133 | 1138 | - | Rel-16 | F | NR\_Mob\_enh-Perf | agreed |
| R4-2014231 | Maintenance CR on SA inter-frequency event triggered reporting tests for FR1 | Apple | 38.133 | 1139 | - | Rel-16 | F | NR\_newRAT-Perf | agreed |
| R4-2014235 | CR on CSSF with both CSI-RS and SSB | Apple | 38.133 | 1140 | - | Rel-16 | F | NR\_CSIRS\_L3meas-Core | revised |
| R4-2017317 | CR on CSSF with both CSI-RS and SSB | Apple | 38.133 | 1140 | 1 | Rel-16 | F | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2014238 | CR on Applicability of RRC based BWP switch requirements - Rel15 | Apple | 38.133 | 1141 | - | Rel-15 | F | NR\_newRAT-Core | merged |
| R4-2014239 | CR on Applicability of RRC based BWP switch requirements - Rel16 | Apple | 38.133 | 1142 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2014245 | CR to 38.133 on RRM requirements for multi-TRxP | Apple | 38.133 | 1143 | - | Rel-16 | F | NR\_eMIMO-Core | postponed |
| R4-2014246 | CR to 38.133 on Link recovery requirements | Apple | 38.133 | 1144 | - | Rel-16 | F | NR\_eMIMO-Core | postponed |
| R4-2014268 | CR on CSI-RS BW condition for BFD/CBD R15 | Apple | 38.133 | 1145 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2017037 | CR on CSI-RS BW condition for BFD/CBD R15 | Apple | 38.133 | 1145 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014269 | CR on CSI-RS BW condition for BFD/CBD R16 | Apple | 38.133 | 1146 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2014271 | CR on AP-CSI-RS based L1-RSRP measurement R15 | Apple, Huawei, HiSilicon | 38.133 | 1147 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2017038 | CR on AP-CSI-RS based L1-RSRP measurement R15 | Apple, Huawei, HiSilicon | 38.133 | 1147 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014272 | CR on AP-CSI-RS based L1-RSRP measurement R16 | Apple, Huawei, HiSilicon | 38.133 | 1148 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2014274 | CR on CSSF for R15 EN-DC | Apple | 38.133 | 1149 | - | Rel-15 | F | NR\_newRAT-Core | merged |
| R4-2014281 | CR on R16 IDLE/INACTIVE RRM requirement with SMTC2-LP | Apple | 38.133 | 1150 | - | Rel-16 | B | TEI16 | postponed |
| R4-2014288 | CR on introducing CSI-RS configurations for RRM | Qualcomm CDMA Technologies | 38.133 | 1151 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | revised |
| R4-2017337 | CR on introducing CSI-RS configurations for RRM | Qualcomm CDMA Technologies | 38.133 | 1151 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | endorsed |
| R4-2014295 | CR of NR V2X operating band group | LG Electronics Inc. | 38.133 | 1152 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2017101 | CR of NR V2X operating band group | LG Electronics Inc. | 38.133 | 1152 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2014296 | CR of NR V2X measurement accuracy requirements(SL-RSSI and L1 SL-RSRP) | LG Electronics Inc. | 38.133 | 1153 | - | Rel-16 | B | 5G\_V2X\_NRSL-Perf | revised |
| R4-2017102 | CR of NR V2X measurement accuracy requirements(SL-RSSI and L1 SL-RSRP) | LG Electronics Inc. | 38.133 | 1153 | 1 | Rel-16 | B | 5G\_V2X\_NRSL-Perf | endorsed |
| R4-2014298 | CR of Annex.B for NR V2X side conditions | LG Electronics Inc. | 38.133 | 1154 | - | Rel-16 | B | 5G\_V2X\_NRSL-Perf | revised |
| R4-2017103 | CR of Annex.B for NR V2X side conditions | LG Electronics Inc. | 38.133 | 1154 | 1 | Rel-16 | B | 5G\_V2X\_NRSL-Perf | endorsed |
| R4-2014358 | CR on TS38.133 for dual active protocol stack handover | MediaTek inc. | 38.133 | 1155 | - | Rel-16 | F | NR\_Mob\_enh-Core | revised |
| R4-2017094 | CR on TS38.133 for dual active protocol stack handover | MediaTek inc. | 38.133 | 1155 | 1 | Rel-16 | F | NR\_Mob\_enh-Core | agreed |
| R4-2014360 | CR on TS38.133 interruption time for CA with non-aligned frame boundaries | MediaTek inc. | 38.133 | 1156 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2017128 | CR on TS38.133 interruption time for CA with non-aligned frame boundaries | MediaTek inc. | 38.133 | 1156 | 1 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2017330 | CR on TS38.133 interruption time for CA with non-aligned frame boundaries | MediaTek inc. | 38.133 | 1156 | 2 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2014362 | CR on TS38.133 for measurement capability of IDLE mode DCCA measurement | MediaTek inc., Huawei, HiSilicon | 38.133 | 1157 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | merged |
| R4-2014364 | CR on TS38.133 for inter-frequency measurement requirement without gap | MediaTek inc. | 38.133 | 1158 | - | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2014372 | CR on TS38.133 for cell activation and deactivation test case | MediaTek inc. | 38.133 | 1159 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014373 | CR on TS38.133 for cell activation and deactivation test case | MediaTek inc. | 38.133 | 1160 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014374 | CR on TS38.133 for cell reselection test case | MediaTek inc. | 38.133 | 1161 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017046 | CR on TS38.133 for cell reselection test case | MediaTek inc. | 38.133 | 1161 | 1 | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017334 | CR on TS38.133 for cell reselection test case | MediaTek inc. | 38.133 | 1161 | 2 | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017368 | CR on TS38.133 for cell reselection test case | MediaTek inc. | 38.133 | 1161 | 3 | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017378 | CR on TS38.133 for cell reselection test case | MediaTek inc. | 38.133 | 1161 | 4 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014375 | CR on TS38.133 for cell reselection test case | MediaTek inc. | 38.133 | 1162 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014376 | Correction of active BWP switch test case | MediaTek inc. | 38.133 | 1163 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017047 | Correction of active BWP switch test case | MediaTek inc. | 38.133 | 1163 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014377 | CR on TS38.133 for active BWP switch test cases | MediaTek inc. | 38.133 | 1164 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014378 | CR on TS38.133 for E-UTRAN | MediaTek inc. | 38.133 | 1165 | - | Rel-16 | F | TEI16 | agreed |
| R4-2014379 | CR on TS38.133 for SCell activation and deactivation delay test cases | MediaTek inc. | 38.133 | 1166 | - | Rel-16 | F | TEI16 | agreed |
| R4-2014406 | CR for TS38.133 Rel-15, Correction for RRM core and test cases | CATT | 38.133 | 1167 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014407 | CR for TS38.133 Rel-16, Correction for RRM core and test cases | CATT | 38.133 | 1168 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014408 | CR for TS38.133, Remove duplication definition for measurement requirements for power saving | CATT | 38.133 | 1169 | - | Rel-16 | F | NR\_UE\_pow\_sav-Core | not pursued |
| R4-2014410 | CR for TS38.133, test case for cell reselection to FR1 intra-frequency NR case for power saving | CATT | 38.133 | 1170 | - | Rel-16 | B | NR\_UE\_pow\_sav-Perf | revised |
| R4-2017137 | CR for TS38.133, test case for cell reselection to FR1 intra-frequency NR case for power saving | CATT | 38.133 | 1170 | 1 | Rel-16 | B | NR\_UE\_pow\_sav-Perf | endorsed |
| R4-2014429 | CR on abbreviations about CSI-RS based measurement in 38.133. | CATT | 38.133 | 1171 | - | Rel-16 | F | NR\_CSIRS\_L3meas-Core | revised |
| R4-2017226 | CR on abbreviations about CSI-RS based measurement in 38.133. | CATT | 38.133 | 1171 | 1 | Rel-16 | F | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2014430 | CR on CSI-RS based intra-frequency measurement | CATT | 38.133 | 1172 | - | Rel-16 | F | NR\_CSIRS\_L3meas-Core | merged |
| R4-2014431 | CR on CSI-RS based inter-frequency measurement. | CATT | 38.133 | 1173 | - | Rel-16 | F | NR\_CSIRS\_L3meas-Core | merged |
| R4-2014432 | CR on scheduling restriction for CSI-RS based intra-frequency measurement. | CATT | 38.133 | 1174 | - | Rel-16 | F | NR\_CSIRS\_L3meas-Core | merged |
| R4-2014433 | CR on CSI-RS configuration for mobility | CATT | 38.133 | 1175 | - | Rel-16 | F | NR\_CSIRS\_L3meas-Core | merged |
| R4-2014434 | CR on conditions for NR CSI-RS based L3 measurement | CATT | 38.133 | 1176 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | revised |
| R4-2017318 | CR on conditions for NR CSI-RS based L3 measurement | CATT | 38.133 | 1176 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | endorsed |
| R4-2014441 | CR on performance requirement for CSI-RSRP L3 measurement | CATT | 38.133 | 1177 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | merged |
| R4-2014442 | CR on performance requirement for CSI-RSRQ L3 measurement | CATT | 38.133 | 1178 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | revised |
| R4-2017320 | CR on performance requirement for CSI-RSRQ L3 measurement | CATT | 38.133 | 1178 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | revised |
| R4-2017348 | CR on performance requirement for CSI-RSRQ L3 measurement | CATT | 38.133 | 1178 | 2 | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | endorsed |
| R4-2014443 | CR on performance requirement for CSI-SINR L3 measurement | CATT | 38.133 | 1179 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | merged |
| R4-2014444 | Test case for CSI-RS based L3 measurement | CATT | 38.133 | 1180 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | revised |
| R4-2017233 | Test case for CSI-RS based L3 measurement | CATT | 38.133 | 1180 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | endorsed |
| R4-2014450 | CR on PRS RSTD accuracy requirements | CATT | 38.133 | 1181 | - | Rel-16 | B | NR\_pos-Perf | merged |
| R4-2014451 | CR on PRS-RSRP accuracy requirements | CATT | 38.133 | 1182 | - | Rel-16 | B | NR\_pos-Perf | revised |
| R4-2017154 | CR on PRS-RSRP accuracy requirements | CATT | 38.133 | 1182 | 1 | Rel-16 | B | NR\_pos-Perf | endorsed |
| R4-2014452 | CR on UE Rx-Tx time difference accuracy requirements | CATT | 38.133 | 1183 | - | Rel-16 | B | NR\_pos-Perf | merged |
| R4-2014505 | CR to TS 38.133: Add information on the inter-band EN-DC and UL CA configurations with no DL interruption | China Telecom | 38.133 | 1184 | - | Rel-16 | F | NR\_RF\_FR1-Core | agreed |
| R4-2014528 | CR on RRM relaxation in R16 UE power saving | vivo | 38.133 | 1185 | - | Rel-16 | F | NR\_UE\_pow\_sav-Core | not pursued |
| R4-2014531 | CR on R16 CSI-RS based L3 measurements | vivo | 38.133 | 1186 | - | Rel-16 | F | NR\_CSIRS\_L3meas-Core | revised |
| R4-2017227 | CR on R16 CSI-RS based L3 measurements | vivo | 38.133 | 1186 | 1 | Rel-16 | F | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2014580 | Intra-band Inter-frequency sync DAPS handover test in SA for FR1 | Intel Corporation | 38.133 | 1187 | - | Rel-16 | B | NR\_Mob\_enh-Perf | revised |
| R4-2017096 | Intra-band Inter-frequency sync DAPS handover test in SA for FR1 | Intel Corporation | 38.133 | 1187 | 1 | Rel-16 | B | NR\_Mob\_enh-Perf | revised |
| R4-2017351 | Intra-band Inter-frequency sync DAPS handover test in SA for FR1 | Intel Corporation | 38.133 | 1187 | 2 | Rel-16 | B | NR\_Mob\_enh-Perf | agreed |
| R4-2014601 | CR on TS 38.133 for radio link monitoring test case R15 | MediaTek inc. | 38.133 | 1188 | - | Rel-15 | F | NR\_newRAT-Perf | postponed |
| R4-2014602 | CR on TS 38.133 for radio link monitoring test case R16 | MediaTek inc. | 38.133 | 1189 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2014623 | Introduction of CSSF requirements for CSI-RS based L3 measurement | MediaTek inc., CATT | 38.133 | 1190 | - | Rel-16 | F | NR\_CSIRS\_L3meas-Core | postponed |
| R4-2014635 | CR: Interruption requirement for NR V2X synchronization source chang | Qualcomm, Inc. | 38.133 | 1191 | - | Rel-16 | F | 5G\_V2X\_NRSL | revised |
| R4-2017345 | CR: Interruption requirement for NR V2X synchronization source chang | Qualcomm, Inc. | 38.133 | 1191 | 1 | Rel-16 | F | 5G\_V2X\_NRSL | agreed |
| R4-2014646 | 38.133 CR on conditions for NR SRS carrier switching | Qualcomm, Inc. | 38.133 | 1192 | - | Rel-16 | F | NR\_RRM\_enh | postponed |
| R4-2017181 | 38.133 CR on conditions for NR SRS carrier switching | Qualcomm, Inc. | 38.133 | 1192 | 1 | Rel-16 | F | NR\_RRM\_enh | withdrawn |
| R4-2014671 | Fine/rough beam assumption for CLI performance test cases | LG Electronics Inc. | 38.133 | 1193 | - | Rel-16 | F | NR\_CLI\_RIM-Perf | agreed |
| R4-2014691 | 38.133 CR on CSSFintra for measurement period for intra-frequency measurements in connected mode for Rel-16 NR HST | CMCC | 38.133 | 1194 | - | Rel-16 | F | NR\_HST-Core | revised |
| R4-2017242 | 38.133 CR on CSSFintra for measurement period for intra-frequency measurements in connected mode for Rel-16 NR HST | CMCC | 38.133 | 1194 | 1 | Rel-16 | F | NR\_HST-Core | agreed |
| R4-2014693 | CR on carrier frequency range of PCell/PSCell for the maximum number of RLM-RS resources | CMCC | 38.133 | 1195 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014694 | CR on carrier frequency range of PCell/PSCell for the maximum number of RLM-RS resources | CMCC | 38.133 | 1196 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2014761 | CR on active BWP switch in R15 | MediaTek inc. | 38.133 | 1197 | - | Rel-15 | F | NR\_newRAT-Core | merged |
| R4-2014762 | CR on active BWP switch in R16 | MediaTek inc. | 38.133 | 1198 | - | Rel-16 | A | NR\_newRAT-Core | merged |
| R4-2014763 | CR on active TCI state switching delay in R15 | MediaTek inc. | 38.133 | 1199 | - | Rel-15 | F | NR\_newRAT-Core | postponed |
| R4-2014764 | CR on active TCI state switching delay in R16 | MediaTek inc. | 38.133 | 1200 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2014765 | CR on MO merge in R15 | MediaTek inc. | 38.133 | 1201 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2017336 | CR on MO merge in R15 | MediaTek inc. | 38.133 | 1201 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014766 | CR on MO merge in R16 | MediaTek inc. | 38.133 | 1202 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2014774 | CR on multiple BWP switch in R16 | MediaTek inc. | 38.133 | 1203 | - | Rel-16 | F | NR\_RRM\_enh-Core | postponed |
| R4-2014796 | CR on interruptions at E-UTRA SRS carrier based switching in TS38.133 | OPPO | 38.133 | 1204 | - | Rel-16 | A | TEI16 | revised |
| R4-2017067 | CR on interruptions at E-UTRA SRS carrier based switching in TS38.133 | OPPO | 38.133 | 1204 | 1 | Rel-16 | A | TEI16 | postponed |
| R4-2014836 | CR for test case for cell reselection to FR1 inter-RAT E-UTRA for not at cell edge criterion | vivo | 38.133 | 1205 | - | Rel-16 | B | NR\_UE\_pow\_sav-Perf | revised |
| R4-2017139 | CR for test case for cell reselection to FR1 inter-RAT E-UTRA for not at cell edge criterion | vivo | 38.133 | 1205 | 1 | Rel-16 | B | NR\_UE\_pow\_sav-Perf | endorsed |
| R4-2014837 | CR for simultaneous DCI based BWP switch delay on multiple CCs | vivo | 38.133 | 1206 | - | Rel-16 | F | NR\_RRM\_enh-Core | postponed |
| R4-2014838 | CR for test cases for simultaneously DCI/timer based bwp switch over mulitple CCs | vivo | 38.133 | 1207 | - | Rel-16 | B | NR\_RRM\_enh-Perf | postponed |
| R4-2014865 | Correction on beamFailureInstanceMaxCount for test case of availability restriction during FR2 BFR in R15 | MediaTek inc. | 38.133 | 1208 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017049 | Correction on beamFailureInstanceMaxCount for test case of availability restriction during FR2 BFR in R15 | MediaTek inc. | 38.133 | 1208 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014866 | Correction on beamFailureInstanceMaxCount for test cases of availability restriction during FR2 BFR in R16 | MediaTek inc. | 38.133 | 1209 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014868 | Clarification for NR-U RRM requirements with DRX in use | MediaTek inc. | 38.133 | 1210 | - | Rel-16 | F | NR\_unlic-Core | not pursued |
| R4-2014870 | CR on intra-frequency and inter-frequency measurement with CCA and RSSI measurements | MediaTek inc. | 38.133 | 1211 | - | Rel-16 | F | NR\_unlic-Core | postponed |
| R4-2014874 | Correction on unknown SCell activation in FR2. | MediaTek inc. | 38.133 | 1212 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2017205 | Correction on unknown SCell activation in FR2. | MediaTek inc. | 38.133 | 1212 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2014933 | Big CR on 2-step RA type RRM performance requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1213 | - | Rel-16 | B | NR\_2step\_RACH-Perf | revised |
| R4-2017253 | Big CR on 2-step RA type RRM performance requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1213 | 1 | Rel-16 | B | NR\_2step\_RACH-Perf | agreed |
| R4-2014935 | CR Maintenance 2-step RACH RRM requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1214 | - | Rel-16 | F | NR\_2step\_RACH-Core | revised |
| R4-2017255 | CR Maintenance 2-step RACH RRM requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1214 | 1 | Rel-16 | F | NR\_2step\_RACH-Core | agreed |
| R4-2014947 | Correction of RRM tests | Nokia, Nokia Shanghai Bell | 38.133 | 1215 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014948 | Correction of RRM tests | Nokia, Nokia Shanghai Bell | 38.133 | 1216 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014964 | CR on IDLE state cell re-selection requirements for HST in 38.133 | vivo,Huawei, HiSilicon | 38.133 | 1217 | - | Rel-16 | F | NR\_HST-Core | revised |
| R4-2017240 | CR on IDLE state cell re-selection requirements for HST in 38.133 | vivo,Huawei, HiSilicon | 38.133 | 1217 | 1 | Rel-16 | F | NR\_HST-Core | agreed |
| R4-2014965 | CR on IDLE state cell-reselection requirements for HST in 36.133 | vivo,Huawei, HiSilicon | 38.133 | 1218 | - | Rel-16 | F | NR\_HST-Core | withdrawn |
| R4-2015147 | Test cases for NR -NR cell identification in connected mode for high speed | Ericsson | 38.133 | 1219 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017249 | Test cases for NR -NR cell identification in connected mode for high speed | Ericsson | 38.133 | 1219 | 1 | Rel-16 | B | NR\_HST-Perf | endorsed |
| R4-2015148 | Correction of beam assumptions in interfrequency EN-DC FR1+FR2 tests | Ericsson | 38.133 | 1220 | - | Rel-15 | F | NR\_newRAT-Perf | merged |
| R4-2015149 | Correction of beam assumptions in interfrequency EN-DC FR1+FR2 tests | Ericsson | 38.133 | 1221 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2015150 | Correction of TBD values in EN-DC PSCell addition and release delay test | Ericsson | 38.133 | 1222 | - | Rel-15 | F | NR\_newRAT-Perf | postponed |
| R4-2017050 | Correction of TBD values in EN-DC PSCell addition and release delay test | Ericsson | 38.133 | 1222 | 1 | Rel-15 | F | NR\_newRAT-Perf | withdrawn |
| R4-2015151 | Correction of TBD values in EN-DC PSCell addition and release delay test | Ericsson | 38.133 | 1223 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2015152 | Correction to types of requirements in annex A | Ericsson | 38.133 | 1224 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015153 | Correction to types of requirements in annex A | Ericsson | 38.133 | 1225 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015154 | Corrections to frequency range in interfrequency measurement procedures tests | Ericsson | 38.133 | 1226 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017051 | Corrections to frequency range in interfrequency measurement procedures tests | Ericsson | 38.133 | 1226 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015155 | Corrections to frequency range in interfrequency measurement procedures tests | Ericsson | 38.133 | 1227 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015156 | Correction to high speed idle mode core requirement | Ericsson | 38.133 | 1228 | - | Rel-16 | F | NR\_HST-Core | not pursued |
| R4-2015157 | Correction on TBD values in FR1+FR2 interfrequency RSRP accuracy tests | Ericsson | 38.133 | 1229 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015158 | Correction on TBD values in FR1+FR2 interfrequency RSRP accuracy tests | Ericsson | 38.133 | 1230 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015159 | Addition of symbol definitions | Ericsson | 38.133 | 1231 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2015160 | Addition of symbol definitions | Ericsson | 38.133 | 1232 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2015161 | Correction of TBD value in Radio Link Monitoring Out-of-sync Tests for FR2 configured with CSI-RS-based RLM | Ericsson | 38.133 | 1233 | - | Rel-15 | F | NR\_newRAT-Perf | merged |
| R4-2015162 | Correction of TBD value in Radio Link Monitoring Out-of-sync Tests for FR2 configured with CSI-RS-based RLM | Ericsson | 38.133 | 1234 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2015163 | Square bracket removal in 38.133 section A.1 to A.5 | Ericsson | 38.133 | 1235 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017052 | Square bracket removal in 38.133 section A.1 to A.5 | Ericsson | 38.133 | 1235 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015164 | Square bracket removal in 38.133 section A.1 to A.5 | Ericsson | 38.133 | 1236 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015165 | Square bracket removal in 38.133 section A.6 to A.8 | Ericsson | 38.133 | 1237 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017163 | Square bracket removal in 38.133 section A.6 to A.8 | Ericsson | 38.133 | 1237 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015166 | Square bracket removal in 38.133 section A.6 to A.8 | Ericsson | 38.133 | 1238 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015168 | Corrections to DAPS requirements | Ericsson | 38.133 | 1239 | - | Rel-16 | F | NR\_Mob\_enh-Core | postponed |
| R4-2017095 | Corrections to DAPS requirements | Ericsson | 38.133 | 1239 | 1 | Rel-16 | F | NR\_Mob\_enh-Core | withdrawn |
| R4-2015169 | Conditional handover test cases for NR | Ericsson | 38.133 | 1240 | - | Rel-16 | B | NR\_Mob\_enh-Perf | revised |
| R4-2017097 | Conditional handover test cases for NR | Ericsson | 38.133 | 1240 | 1 | Rel-16 | B | NR\_Mob\_enh-Perf | agreed |
| R4-2015170 | Updates to general section for NR-U in 38.133 | Ericsson | 38.133 | 1241 | - | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2015172 | CR to introduce interfrequency FR2 CGI reading test for SA NR (TC2) | Ericsson | 38.133 | 1242 | - | Rel-16 | B | NR\_RRM\_enh-Perf | revised |
| R4-2017195 | CR to introduce interfrequency FR2 CGI reading test for SA NR (TC2) | Ericsson | 38.133 | 1242 | 1 | Rel-16 | B | NR\_RRM\_enh-Perf | endorsed |
| R4-2015175 | Test cases for mandatory measurement gap | Ericsson | 38.133 | 1243 | - | Rel-16 | B | NR\_RRM\_enh-Perf | revised |
| R4-2017339 | Test cases for mandatory measurement gap | Ericsson | 38.133 | 1243 | 1 | Rel-16 | B | NR\_RRM\_enh-Perf | endorsed |
| R4-2015202 | CR to 38.133 - Introducing NR-U random access requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1244 | - | Rel-16 | B | NR\_unlic-Core | postponed |
| R4-2015203 | CR to 38.133 - NR-U SCell activation and deactivation requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1245 | - | Rel-16 | F | NR\_unlic-Core | merged |
| R4-2015204 | CR to 38.133 - Clarification of NR-U timing requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1246 | - | Rel-16 | F | NR\_unlic-Core | merged |
| R4-2015205 | CR to 38.133 on NR-U intra-frequency measurements | Nokia, Nokia Shanghai Bell | 38.133 | 1247 | - | Rel-16 | F | NR\_unlic-Core | merged |
| R4-2015208 | CR on BWP switch | MediaTek inc. | 38.133 | 1248 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2015209 | CR on TCI state | MediaTek inc. | 38.133 | 1249 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2015210 | CR on MO merge | MediaTek inc. | 38.133 | 1250 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2015300 | CR to TS 38.133 on DCI based BWP switch requirements applicability | NEC | 38.133 | 1251 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2017335 | CR to TS 38.133 on DCI based BWP switch requirements applicability | NEC | 38.133 | 1251 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2015305 | CR to TS 38.133 on DCI based BWP switch requirements for cross carrier scheduling | NEC | 38.133 | 1252 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2017323 | CR to TS 38.133 on DCI based BWP switch requirements for cross carrier scheduling | NEC | 38.133 | 1252 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2015306 | CR to TS 38.133 on clarification of applicability of SCell activation requirements for unknown FR1 cell | NEC | 38.133 | 1253 | - | Rel-15 | F | NR\_newRAT-Core | merged |
| R4-2015369 | CR on PRS-RSRP report mapping | CATT | 38.133 | 1254 | - | Rel-16 | B | NR\_pos-Core | revised |
| R4-2017146 | CR on PRS-RSRP report mapping | CATT | 38.133 | 1254 | 1 | Rel-16 | B | NR\_pos-Core | agreed |
| R4-2015370 | CR on conditions for NR RSTD measurement | CATT | 38.133 | 1255 | - | Rel-16 | B | NR\_pos-Perf | revised |
| R4-2017157 | CR on conditions for NR RSTD measurement | CATT | 38.133 | 1255 | 1 | Rel-16 | B | NR\_pos-Perf | endorsed |
| R4-2015445 | Correction to CSSF calculation R15 | Huawei, HiSilicon | 38.133 | 1256 | - | Rel-15 | F | NR\_newRAT-Core | postponed |
| R4-2017034 | Correction to CSSF calculation R15 | Huawei, HiSilicon | 38.133 | 1256 | 1 | Rel-15 | F | NR\_newRAT-Core | withdrawn |
| R4-2015446 | Correction to CSSF calculation R16 | Huawei, HiSilicon | 38.133 | 1257 | - | Rel-16 | F | NR\_newRAT-Core | postponed |
| R4-2015447 | Correction to CSI-RS RMC configuration R15 | Huawei, HiSilicon | 38.133 | 1258 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017043 | Correction to CSI-RS RMC configuration R15 | Huawei, HiSilicon | 38.133 | 1258 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015448 | Correction to CSI-RS RMC configuration R16 | Huawei, HiSilicon | 38.133 | 1259 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015449 | Correction to cell reselection test cases R15 | Huawei, HiSilicon | 38.133 | 1260 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017053 | Correction to cell reselection test cases R15 | Huawei, HiSilicon | 38.133 | 1260 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015450 | Correction to cell reselection test cases R16 | Huawei, HiSilicon | 38.133 | 1261 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015451 | Correction to inter-RAT handover test cases R15 | Huawei, HiSilicon | 38.133 | 1262 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017054 | Correction to inter-RAT handover test cases R15 | Huawei, HiSilicon | 38.133 | 1262 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015452 | Correction to inter-RAT handover test cases R16 | Huawei, HiSilicon | 38.133 | 1263 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015453 | Correction to NR measurement under LTE SA test cases R15 | Huawei, HiSilicon | 38.133 | 1264 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017055 | Correction to NR measurement under LTE SA test cases R15 | Huawei, HiSilicon | 38.133 | 1264 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015454 | Correction to NR measurement under LTE SA test cases R16 | Huawei, HiSilicon | 38.133 | 1265 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015455 | Correction to inter-RAT SFTD measurement test cases R15 | Huawei, HiSilicon | 38.133 | 1266 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017056 | Correction to inter-RAT SFTD measurement test cases R15 | Huawei, HiSilicon | 38.133 | 1266 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015456 | Correction to inter-RAT SFTD measurement test cases R16 | Huawei, HiSilicon | 38.133 | 1267 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015457 | CR on maintaining antenna configurations in TS38.133 | Huawei, HiSilicon | 38.133 | 1268 | - | Rel-15 | F | NR\_newRAT-Perf | not pursued |
| R4-2015458 | CR on maintaining Antenna configurations in TS38.133 R16 | Huawei, HiSilicon | 38.133 | 1269 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2015459 | CR on maintaining BFD/CBD measurements test cases R15 | Huawei, HiSilicon | 38.133 | 1270 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015460 | CR on maintaining BFD/CBD measurements test cases in TS38.133 R16 | Huawei, HiSilicon | 38.133 | 1271 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015464 | CR on maintaining DAPS handover requirements | Huawei, HiSilicon | 38.133 | 1272 | - | Rel-16 | F | NR\_Mob\_enh-Core | postponed |
| R4-2015477 | CR on maintaining L1-RSRP measurements test cases R16 | Huawei, HiSilicon | 38.133 | 1273 | - | Rel-16 | F | NR\_newRAT-Perf | agreed |
| R4-2015479 | CR on MRTD/MTTD requirements for FR1 intra-band NCCA R16 | Huawei, HiSilicon | 38.133 | 1274 | - | Rel-16 | F | TEI16 | postponed |
| R4-2015482 | Correction CR to Rel-16 UE power saving requirements | Huawei, HiSilicon | 38.133 | 1275 | - | Rel-16 | F | NR\_UE\_pow\_sav-Core | revised |
| R4-2017131 | Correction CR to Rel-16 UE power saving requirements | Huawei, HiSilicon | 38.133 | 1275 | 1 | Rel-16 | F | NR\_UE\_pow\_sav-Core | agreed |
| R4-2015488 | Correction on DL interruption on Tx Switching between two uplink carriers | Huawei, HiSilicon | 38.133 | 1276 | - | Rel-16 | F | NR\_RF\_FR1-Core | agreed |
| R4-2015490 | CR on CSI-RS based intra-frequency measurement requirements | Huawei, HiSilicon | 38.133 | 1277 | - | Rel-16 | F | NR\_CSIRS\_L3meas-Core | revised |
| R4-2017228 | CR on CSI-RS based intra-frequency measurement requirements | Huawei, HiSilicon | 38.133 | 1277 | 1 | Rel-16 | F | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2015491 | CR on CSSF definition for CSI-RS based measurement | Huawei, HiSilicon | 38.133 | 1278 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | postponed |
| R4-2015492 | Correction on SSB based L1-RSRP Reporting for HST | Huawei, HiSilicon | 38.133 | 1279 | - | Rel-16 | F | NR\_HST-Core | merged |
| R4-2015496 | CR on inter-frequency measurement without gap | Huawei, HiSilicon | 38.133 | 1280 | - | Rel-16 | F | NR\_RRM\_enh-Core | postponed |
| R4-2017208 | CR on inter-frequency measurement without gap | Huawei, HiSilicon | 38.133 | 1280 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | withdrawn |
| R4-2015499 | Correction on RRC based spatial relation switch delay | Huawei, HiSilicon | 38.133 | 1281 | - | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2015503 | Correction on SA inter-RAT measurement FR1 test case | Huawei, HiSilicon | 38.133 | 1282 | - | Rel-16 | F | NR\_newRAT-Perf | agreed |
| R4-2015504 | CR on BWP switching delay on mulitple CCs | Huawei, HiSilicon | 38.133 | 1283 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2017129 | CR on BWP switching delay on mulitple CCs | Huawei, HiSilicon | 38.133 | 1283 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2015505 | CR on interruption due to active BWP switching on mulitple CCs | Huawei, HiSilicon | 38.133 | 1284 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2017175 | CR on interruption due to active BWP switching on mulitple CCs | Huawei, HiSilicon | 38.133 | 1284 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2015508 | CR on Link recovery for IAB-MT | Huawei, HiSilicon | 38.133 | 1285 | - | Rel-16 | F | NR\_IAB-Core | withdrawn |
| R4-2015509 | CR on RLM for IAB-MT | Huawei, HiSilicon | 38.133 | 1286 | - | Rel-16 | F | NR\_IAB-Core | withdrawn |
| R4-2015516 | CR on SCell activation and deactivation requirements for NR-U | Huawei, HiSilicon | 38.133 | 1287 | - | Rel-16 | F | NR\_unlic-Core | merged |
| R4-2015518 | CR on TCI state switching requirements for NR-U | Huawei, HiSilicon | 38.133 | 1288 | - | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2017085 | CR on TCI state switching requirements for NR-U | Huawei, HiSilicon | 38.133 | 1288 | 1 | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2015519 | CR on RLM requirements for NR-U | Huawei, HiSilicon | 38.133 | 1289 | - | Rel-16 | F | NR\_unlic-Core | merged |
| R4-2015520 | CR on Beam mangement requirements for NR-U | Huawei, HiSilicon | 38.133 | 1290 | - | Rel-16 | F | NR\_unlic-Core | merged |
| R4-2015521 | CR on intra-frequency measurement requirements for NR-U | Huawei, HiSilicon | 38.133 | 1291 | - | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2015523 | CR on CSSF RSSI/CO measurement for NR-U | Huawei, HiSilicon | 38.133 | 1292 | - | Rel-16 | B | NR\_unlic-Core | postponed |
| R4-2015527 | CR on BFD and CBD requirements | Huawei, HiSilicon | 38.133 | 1293 | - | Rel-15 | F | NR\_newRAT-Core | merged |
| R4-2015528 | CR on BFD and CBD requirements\_R16 | Huawei, HiSilicon | 38.133 | 1294 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2015529 | CR on RRC-based BWP switch requirements | Huawei, HiSilicon | 38.133 | 1295 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2017342 | CR on RRC-based BWP switch requirements | Huawei, HiSilicon | 38.133 | 1295 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2015530 | CR on RRC-based BWP switch requirements\_R16 | Huawei, HiSilicon | 38.133 | 1296 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2015531 | CR on RRC-based active TCI state switch test case Rel-15 | Huawei, HiSilicon | 38.133 | 1297 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017057 | CR on RRC-based active TCI state switch test case Rel-15 | Huawei, HiSilicon | 38.133 | 1297 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015532 | CR on RRC-based active TCI state switch test case Rel-16 | Huawei, HiSilicon | 38.133 | 1298 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015533 | Update NR Frequency Band Groups to include Band n48 | Huawei, HiSilicon | 38.133 | 1299 | - | Rel-16 | F | NR\_n48\_LTE\_48\_coex-Core | agreed |
| R4-2015534 | Update NR Frequency Band Groups to include Band n65 | Huawei, HiSilicon | 38.133 | 1300 | - | Rel-16 | F | NR\_n65\_BW-Core | agreed |
| R4-2015570 | CR to 38.133: Correction to SCell activation delay requirements | ZTE | 38.133 | 1301 | - | Rel-15 | F | NR\_newRAT-Core | postponed |
| R4-2015571 | CR to 38.133 correction to SCell activation delay requirements | ZTE | 38.133 | 1302 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2015572 | CR to 38.133: Correction to RRC based BWP switch requirements | ZTE | 38.133 | 1303 | - | Rel-15 | F | NR\_newRAT-Core | postponed |
| R4-2015573 | CR to 38.133 correction to RRC based BWP switch requirements | ZTE | 38.133 | 1304 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2015574 | CR to 38.133: Correction to relaxed measurement requirements | ZTE | 38.133 | 1305 | - | Rel-16 | F | NR\_UE\_pow\_sav-Core | agreed |
| R4-2015575 | CR to 38.133: Correction to relaxed measurement requirements | ZTE | 38.133 | 1306 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2017189 | CR to 38.133: Correction to relaxed measurement requirements | ZTE | 38.133 | 1306 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2015577 | CR to 38.133: Correction to SRS carrier based switching requirements | ZTE | 38.133 | 1307 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2017182 | CR to 38.133: Correction to SRS carrier based switching requirements | ZTE | 38.133 | 1307 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2015578 | CR to 38.133: Correction to mandatory gap pattern | ZTE | 38.133 | 1308 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2017199 | CR to 38.133: Correction to mandatory gap pattern | ZTE | 38.133 | 1308 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2015671 | [CR] NR Perf Maintenance R16 Cat F | ZTE Corporation | 38.133 | 1309 | - | Rel-16 | F | TEI16 | agreed |
| R4-2015672 | [CR] Specify RRC processing delay in TCI state switching delay | ZTE Corporation | 38.133 | 1310 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2015673 | [CR] Specify RRC processing delay in TCI state switching delay (Cat A) | ZTE Corporation | 38.133 | 1311 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2015674 | [CR] NR Perf Maintenance R15 Cat F | ZTE Corporation | 38.133 | 1312 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017058 | [CR] NR Perf Maintenance R15 Cat F | ZTE Corporation | 38.133 | 1312 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015683 | CR to TS 38.133: introduction of NR band n13 | Huawei, HiSilicon | 38.133 | 1313 | - | Rel-17 | B | NR\_n13-Core | agreed |
| R4-2015733 | CR to remove inter-RAT ECID requirements for NE-DC 38133 R15 | Huawei, HiSilicon | 38.133 | 1314 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2017344 | CR to remove inter-RAT ECID requirements for NE-DC 38133 R15 | Huawei, HiSilicon | 38.133 | 1314 | 1 | Rel-15 | F | NR\_newRAT-Core | postponed |
| R4-2015734 | CR to remove inter-RAT ECID requirements for NE-DC 38133 R16 | Huawei, HiSilicon | 38.133 | 1315 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2015736 | CR on SCell activation requirements R15 | Huawei, HiSilicon | 38.133 | 1316 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2017036 | CR on SCell activation requirements R15 | Huawei, HiSilicon | 38.133 | 1316 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2015737 | CR on SCell activation requirements R16 | Huawei, HiSilicon | 38.133 | 1317 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2015738 | CR on FR2 unkown SCell activation test cases R15 | Huawei, HiSilicon | 38.133 | 1318 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015739 | CR on FR2 unkown SCell activation test cases R16 | Huawei, HiSilicon | 38.133 | 1319 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015740 | CR on BWP in L1-RSRP delay and accuracy test cases R15 | Huawei, HiSilicon | 38.133 | 1320 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015741 | CR on BWP in L1-RSRP delay and accuracy test cases R16 | Huawei, HiSilicon | 38.133 | 1321 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015745 | CR on BWP switching and SCell dormancy | Huawei, HiSilicon | 38.133 | 1322 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2017125 | CR on BWP switching and SCell dormancy | Huawei, HiSilicon | 38.133 | 1322 | 1 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2015751 | CR to update RSTD measurement requirements | Huawei, HiSilicon | 38.133 | 1323 | - | Rel-16 | F | NR\_pos-Core | merged |
| R4-2015753 | CR to update PRS-RSRP measurement requirements | Huawei, HiSilicon | 38.133 | 1324 | - | Rel-16 | F | NR\_pos-Core | revised |
| R4-2017145 | CR to update PRS-RSRP measurement requirements | Huawei, HiSilicon | 38.133 | 1324 | 1 | Rel-16 | F | NR\_pos-Core | agreed |
| R4-2015755 | CR to update UE Rx-Tx time difference measurement requirements | Huawei, HiSilicon | 38.133 | 1325 | - | Rel-16 | F | NR\_pos-Core | merged |
| R4-2015757 | CR on CSSF for PRS measurement | Huawei, HiSilicon | 38.133 | 1326 | - | Rel-16 | F | NR\_pos-Core | merged |
| R4-2015772 | CR on SCell activation requirements | Huawei, HiSilicon | 38.133 | 1327 | - | Rel-16 | F | NR\_RRM\_enh-Core | postponed |
| R4-2017206 | CR on SCell activation requirements | Huawei, HiSilicon | 38.133 | 1327 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | withdrawn |
| R4-2015774 | CR on CGI reading requirements 38.133 | Huawei, HiSilicon | 38.133 | 1328 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2017191 | CR on CGI reading requirements 38.133 | Huawei, HiSilicon | 38.133 | 1328 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2015782 | CR on CSI-RS capability requirements and time restriction | Huawei, HiSilicon | 38.133 | 1329 | - | Rel-16 | F | NR\_CSIRS\_L3meas-Core | merged |
| R4-2015792 | [CR] Specify RRC processing delay in TCI state switching delay for R16 NR-U | ZTE Corporation | 38.133 | 1330 | - | Rel-16 | F | TEI16 | agreed |
| R4-2015804 | Correction of CR0972 implementation | ETSI MCC | 38.133 | 1331 | - | Rel-16 | F | NR\_HST | agreed |
| R4-2015819 | CR: Beam management requirements with CCA | Ericsson | 38.133 | 1332 | - | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2017087 | CR: Beam management requirements with CCA | Ericsson | 38.133 | 1332 | 1 | Rel-16 | F | NR\_unlic-Core | postponed |
| R4-2015823 | CR: Correction of CFRA test in FR2 SA | Ericsson | 38.133 | 1333 | - | Rel-16 | F | NR\_newRAT-Perf | agreed |
| R4-2015826 | CR: Clarification of L1-SINR reporting with CSI-RS based CMR and dedicated IMR configured | Ericsson | 38.133 | 1334 | - | Rel-16 | F | NR\_eMIMO-Core | revised |
| R4-2017165 | CR: Clarification of L1-SINR reporting with CSI-RS based CMR and dedicated IMR configured | Ericsson | 38.133 | 1334 | 1 | Rel-16 | F | NR\_eMIMO-Core | agreed |
| R4-2015876 | Introducing reference to the source of the Lmax and NRLM. | Nokia, Nokia Shanghai Bell | 38.133 | 1335 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2017338 | Introducing reference to the source of the Lmax and NRLM. | Nokia, Nokia Shanghai Bell | 38.133 | 1335 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2015877 | Introducing reference to the source of the Lmax and NRLM. | Nokia, Nokia Shanghai Bell | 38.133 | 1336 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2015878 | Correcting the range of Lmax=8 for unpaired spectrum | Nokia, Nokia Shanghai Bell | 38.133 | 1337 | - | Rel-16 | F | TEI16 | postponed |
| R4-2015883 | CR on UE requirement for MR-DC early measurement reporting in 38.133 | Nokia, Nokia Shanghai Bell | 38.133 | 1338 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2017120 | CR on UE requirement for MR-DC early measurement reporting in 38.133 | Nokia, Nokia Shanghai Bell | 38.133 | 1338 | 1 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2017355 | CR on UE requirement for MR-DC early measurement reporting in 38.133 | Nokia, Nokia Shanghai Bell | 38.133 | 1338 | 2 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2015885 | RRC based spatial relation switch associated with a known DL-RS in SA | Nokia, Nokia Shanghai Bell | 38.133 | 1339 | - | Rel-16 | F | NR\_RRM\_enh-Perf | withdrawn |
| R4-2015985 | CR on measurement restrictions for FR2 inter-band CA | Intel Corporation | 38.133 | 1340 | - | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2015993 | CR to TS 38.133: Corrections to inter-RAT FR1 test cases (Rel-15) | Rohde & Schwarz | 38.133 | 1341 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017059 | CR to TS 38.133: Corrections to inter-RAT FR1 test cases (Rel-15) | Rohde & Schwarz | 38.133 | 1341 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015994 | CR to TS 38.133: Corrections to inter-RAT FR1 test cases (Rel-16) | Rohde & Schwarz | 38.133 | 1342 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2015995 | CR to TS 38.133: Corrections to inter-RAT FR2 test cases (Rel-15) | Rohde & Schwarz | 38.133 | 1343 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017060 | CR to TS 38.133: Corrections to inter-RAT FR2 test cases (Rel-15) | Rohde & Schwarz | 38.133 | 1343 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2015996 | CR to TS 38.133: Corrections to inter-RAT FR2 test cases (Rel-16) | Rohde & Schwarz | 38.133 | 1344 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2016015 | CR 38.133 TC3 MAC-CE based spatial relation info switching | Ericsson | 38.133 | 1345 | - | Rel-16 | B | NR\_RRM\_enh-Perf | revised |
| R4-2017179 | CR 38.133 TC3 MAC-CE based spatial relation info switching | Ericsson | 38.133 | 1345 | 1 | Rel-16 | B | NR\_RRM\_enh-Perf | endorsed |
| R4-2016016 | CR 38.133 Corrections to Conditional PSCell Change delay requirement | Ericsson | 38.133 | 1346 | - | Rel-16 | F | NR\_Mob\_enh-Core | agreed |
| R4-2016019 | CR 38.133 Removal of brackets for Multiple SCell activation | Ericsson | 38.133 | 1347 | - | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2016020 | CR 38.133 Removal of brackets for SCell Dormancy and Direct SCell Activation | Ericsson | 38.133 | 1348 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2017304 | CR 38.133 Removal of brackets for SCell Dormancy and Direct SCell Activation | Ericsson | 38.133 | 1348 | 1 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2016024 | CR 38.133 Corrections to test cases for TCI state switching | Ericsson | 38.133 | 1349 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2016025 | CR 38.133 Correction to test case for TCI state switching (Rel-16) | Ericsson | 38.133 | 1350 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2016026 | CR 38.133 Corrections to MAC-CE and RRC-based spatial relation switching requirements | Ericsson | 38.133 | 1351 | - | Rel-16 | F | NR\_RRM\_enh-Core | postponed |
| R4-2016044 | 38.133 CR on CSI-RS based intra-frequency measurement requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1352 | - | Rel-16 | F | NR\_CSIRS\_L3meas-Core | merged |
| R4-2016045 | 38.133 CR on scheduling restrictions for CSI-RS based intra-frequency measurement | Nokia, Nokia Shanghai Bell | 38.133 | 1353 | - | Rel-16 | F | NR\_CSIRS\_L3meas-Core | merged |
| R4-2016047 | 38.133 CR on the intra-frequency CSI-RSRP accuracy requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1354 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | revised |
| R4-2017319 | 38.133 CR on the intra-frequency CSI-RSRP accuracy requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1354 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | endorsed |
| R4-2016048 | 38.133 CR on the conditions for NR intra-frequency CSI-RS based measurements | Nokia, Nokia Shanghai Bell | 38.133 | 1355 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | merged |
| R4-2016050 | 38.133 CR on the test case of EN-DC event triggered reporting for intra-frequency CSI-RS based measurements in FR1 | Nokia, Nokia Shanghai Bell | 38.133 | 1356 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | revised |
| R4-2017238 | 38.133 CR on the test case of EN-DC event triggered reporting for intra-frequency CSI-RS based measurements in FR1 | Nokia, Nokia Shanghai Bell | 38.133 | 1356 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | endorsed |
| R4-2016051 | 38.133 CR on the test cases of EN-DC measurement accuracy in FR1 for CSI-RS based intra-frequency and inter-frequency measurements | Nokia, Nokia Shanghai Bell | 38.133 | 1357 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | revised |
| R4-2017239 | 38.133 CR on the test cases of EN-DC measurement accuracy in FR1 for CSI-RS based intra-frequency and inter-frequency measurements | Nokia, Nokia Shanghai Bell | 38.133 | 1357 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Perf | endorsed |
| R4-2016062 | gNB timing positioning measurement report mapping update for k | Ericsson | 38.133 | 1358 | - | Rel-16 | F | NR\_pos-Perf | revised |
| R4-2017161 | gNB timing positioning measurement report mapping update for k | Ericsson | 38.133 | 1358 | 1 | Rel-16 | F | NR\_pos-Perf | agreed |
| R4-2016066 | CR for correcting wrong requirement for UE fulfilling not-at-cell edge criterion for measurement relaxation | Qualcomm Incorporated | 38.133 | 1359 | - | Rel-16 | F | NR\_UE\_pow\_sav-Core | not pursued |
| R4-2016146 | Corrections to UE power saving requirements | Ericsson | 38.133 | 1360 | - | Rel-16 | F | NR\_UE\_pow\_sav-Core | revised |
| R4-2017132 | Corrections to UE power saving requirements | Ericsson | 38.133 | 1360 | 1 | Rel-16 | F | NR\_UE\_pow\_sav-Core | agreed |
| R4-2016148 | Cell reselection to FR2 inter-frequency NR case under power saving | Ericsson | 38.133 | 1361 | - | Rel-16 | B | NR\_UE\_pow\_sav-Perf | revised |
| R4-2017142 | Cell reselection to FR2 inter-frequency NR case under power saving | Ericsson | 38.133 | 1361 | 1 | Rel-16 | B | NR\_UE\_pow\_sav-Perf | revised |
| R4-2017353 | Cell reselection to FR2 inter-frequency NR case under power saving | Ericsson | 38.133 | 1361 | 2 | Rel-16 | B | NR\_UE\_pow\_sav-Perf | endorsed |
| R4-2016156 | Refinements on CSSF within gap to include NR positioning measurements | Nokia, Nokia Shanghai Bell | 38.133 | 1362 | - | Rel-16 | F | NR\_pos-Core | revised |
| R4-2017150 | Refinements on CSSF within gap to include NR positioning measurements | Nokia, Nokia Shanghai Bell | 38.133 | 1362 | 1 | Rel-16 | F | NR\_pos-Core | postponed |
| R4-2016160 | Removal of annex B.2.6 on one shot timing adjustment in 38.133 | Ericsson | 38.133 | 1363 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017061 | Removal of annex B.2.6 on one shot timing adjustment in 38.133 | Ericsson | 38.133 | 1363 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2016161 | Removal of annex B.2.6 on one shot timing adjustment in 38.133 | Ericsson | 38.133 | 1364 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2016163 | Correction to NR FR1 DL active BWP switch of Cell with non-DRX in SA (A.6.5.6.2.1) | Ericsson | 38.133 | 1365 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017309 | Correction to NR FR1 DL active BWP switch of Cell with non-DRX in SA (A.6.5.6.2.1) | Ericsson | 38.133 | 1365 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2016164 | Correction to NR FR1 DL active BWP switch of Cell with non-DRX in SA (A.6.5.6.2.1) | Ericsson | 38.133 | 1366 | - | Rel-16 | F | NR\_newRAT-Perf | agreed |
| R4-2016166 | Correction to RRC based non-simultaneous multiple CC BWP | Ericsson | 38.133 | 1367 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2017176 | Correction to RRC based non-simultaneous multiple CC BWP | Ericsson | 38.133 | 1367 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2016169 | TC3: UE specific CBW change on FR1 NR PCell in NR SA (A.6.5.7) | Ericsson | 38.133 | 1368 | - | Rel-16 | B | NR\_RRM\_enh-Perf | revised |
| R4-2017220 | TC3: UE specific CBW change on FR1 NR PCell in NR SA (A.6.5.7) | Ericsson | 38.133 | 1368 | 1 | Rel-16 | B | NR\_RRM\_enh-Perf | endorsed |
| R4-2016176 | Requirements for known cell in RRC re-establishment with CCA | Ericsson | 38.133 | 1369 | - | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2016207 | CR to TS 38.133: Corrections to Tables 9.5.4.1-1 and 9.5.4.2-1. | Nokia, Nokia Shanghai Bell | 38.133 | 1370 | - | Rel-16 | F | NR\_HST-Core | agreed |
| R4-2016373 | CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | 38.133 | 1371 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2017041 | CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | 38.133 | 1371 | 1 | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2017377 | CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | 38.133 | 1371 | 2 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2016374 | CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel16 | Apple | 38.133 | 1372 | - | Rel-16 | A | NR\_newRAT-Core | revised |
| R4-2017380 | CR to 38.133 on Active BWP switch and Active TCI State Switching requirements - Rel16 | Apple | 38.133 | 1372 | 1 | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2016386 | Accuracy requirements for MR-DC EMR (38.133) | Nokia Corporation | 38.133 | 1373 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Perf | revised |
| R4-2017328 | Accuracy requirements for MR-DC EMR (38.133) | Nokia Corporation | 38.133 | 1373 | 1 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Perf | revised |
| R4-2017361 | Accuracy requirements for MR-DC EMR (38.133) | Nokia Corporation | 38.133 | 1373 | 2 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Perf | endorsed |
| R4-2016388 | Updates in EMR requirements | Ericsson | 38.133 | 1374 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | merged |
| R4-2016391 | UE positioning measurements: RSTD | Ericsson | 38.133 | 1375 | - | Rel-16 | F | NR\_pos-Core | revised |
| R4-2017144 | UE positioning measurements: RSTD | Ericsson | 38.133 | 1375 | 1 | Rel-16 | F | NR\_pos-Core | revised |
| R4-2017384 | UE positioning measurements: RSTD | Ericsson | 38.133 | 1375 | 2 | Rel-16 | F | NR\_pos-Core | agreed |
| R4-2016393 | UE positioning measurements: PRS-RSRP | Ericsson | 38.133 | 1376 | - | Rel-16 | F | NR\_pos-Core | merged |
| R4-2016395 | UE positioning measurements: UE Rx-Tx | Ericsson | 38.133 | 1377 | - | Rel-16 | F | NR\_pos-Core | merged |
| R4-2016397 | Correction to CSSF for positioning measurements | Ericsson | 38.133 | 1378 | - | Rel-16 | F | NR\_pos-Core | merged |
| R4-2016400 | NR RRM positioning test cases structure | Ericsson | 38.133 | 1379 | - | Rel-16 | F | NR\_pos-Perf | revised |
| R4-2017152 | NR RRM positioning test cases structure | Ericsson | 38.133 | 1379 | 1 | Rel-16 | F | NR\_pos-Perf | endorsed |
| R4-2016401 | Correction to UE Rx-Tx measurement report mapping | Ericsson | 38.133 | 1380 | - | Rel-16 | F | NR\_pos-Core | endorsed |
| R4-2016403 | PRS-RSRP measurement accuracy | Ericsson | 38.133 | 1381 | - | Rel-16 | B | NR\_pos-Perf | merged |
| R4-2016405 | RSTD measurement accuracy | Ericsson | 38.133 | 1382 | - | Rel-16 | B | NR\_pos-Perf | merged |
| R4-2016407 | UE Rx-Tx measurement accuracy | Ericsson | 38.133 | 1383 | - | Rel-16 | B | NR\_pos-Perf | revised |
| R4-2017155 | UE Rx-Tx measurement accuracy | Ericsson | 38.133 | 1383 | 1 | Rel-16 | B | NR\_pos-Perf | endorsed |
| R4-2016409 | Terminology updates for NR-U | Ericsson | 38.133 | 1384 | - | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2017081 | Terminology updates for NR-U | Ericsson | 38.133 | 1384 | 1 | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2016412 | Updates in SCell activation in NR-U | Ericsson | 38.133 | 1385 | - | Rel-16 | F | NR\_unlic-Core | merged |
| R4-2016413 | Updates in RLM requirements for NR-U | Ericsson | 38.133 | 1386 | - | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2017086 | Updates in RLM requirements for NR-U | Ericsson | 38.133 | 1386 | 1 | Rel-16 | F | NR\_unlic-Core | postponed |
| R4-2016414 | Clause numbering correction | Ericsson | 38.133 | 1387 | - | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2016417 | NR-U test cases structure | Ericsson | 38.133 | 1388 | - | Rel-16 | F | NR\_unlic-Perf | revised |
| R4-2017092 | NR-U test cases structure | Ericsson | 38.133 | 1388 | 1 | Rel-16 | F | NR\_unlic-Perf | endorsed |
| R4-2016418 | Measurement accuracy requirements for NR-U | Ericsson | 38.133 | 1389 | - | Rel-16 | B | NR\_unlic-Perf | revised |
| R4-2017091 | Measurement accuracy requirements for NR-U | Ericsson | 38.133 | 1389 | 1 | Rel-16 | B | NR\_unlic-Perf | endorsed |
| R4-2016419 | Measurementequirements for NR-U | Ericsson | 38.133 | 1390 | - | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2017305 | Measurement requirements for NR-U | Ericsson | 38.133 | 1390 | 1 | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2016422 | Correction in NR SRS carrier-based switching requirements | Ericsson | 38.133 | 1391 | - | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2016428 | CR 38.133 Active BWP switching with cross-carrier scheduling | Ericsson | 38.133 | 1392 | - | Rel-16 | F | NR\_RRM\_enh-Core | not pursued |
| R4-2016555 | Introduction of intra-frequency sync and async DAPS HO test cases in FR1 | Qualcomm Incorporated | 38.133 | 1393 | - | Rel-16 | B | NR\_Mob\_enh-Perf | revised |
| R4-2017099 | Introduction of intra-frequency sync and async DAPS HO test cases in FR1 | Qualcomm Incorporated | 38.133 | 1393 | 1 | Rel-16 | B | NR\_Mob\_enh-Perf | agreed |
| R4-2016556 | Revision of NR positioning measurement requirements applicability | Qualcomm Incorporated | 38.133 | 1394 | - | Rel-16 | F | NR\_pos-Core | postponed |
| R4-2017149 | Revision of NR positioning measurement requirements applicability | Qualcomm Incorporated | 38.133 | 1394 | 1 | Rel-16 | F | NR\_pos-Core | withdrawn |
| R4-2016557 | Revision of PRS-RSRP measurement period requirements | Qualcomm Incorporated | 38.133 | 1395 | - | Rel-16 | F | NR\_pos-Core | merged |
| R4-2016558 | Revision of PRS-RSTD measurement period requirements | Qualcomm Incorporated | 38.133 | 1396 | - | Rel-16 | F | NR\_pos-Core | merged |
| R4-2016559 | Revision of UE Rx-Tx time difference measurement period requirements and applicability | Qualcomm Incorporated | 38.133 | 1397 | - | Rel-16 | F | NR\_pos-Core | merged |
| R4-2016580 | CR to TCI activation in FR1 | Qualcomm Incorporated | 38.133 | 1398 | - | Rel-15 | F | NR\_newRAT-Core | merged |
| R4-2016581 | CR to SSB-less SCell activation delay requirement for deactivated FR1 SCell | Qualcomm Incorporated | 38.133 | 1399 | - | Rel-15 | F | NR\_newRAT-Core | postponed |
| R4-2016583 | CR to Multi-SCell activation for FR1 intra-band contiguous CA | Qualcomm Incorporated | 38.133 | 1400 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2017207 | CR to Multi-SCell activation for FR1 intra-band contiguous CA | Qualcomm Incorporated | 38.133 | 1400 | 1 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2016584 | CR to Staring point of an Interruption window at Direct SCell activation | Qualcomm Incorporated | 38.133 | 1401 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2017126 | CR to Staring point of an Interruption window at Direct SCell activation | Qualcomm Incorporated | 38.133 | 1401 | 1 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | withdrawn |
| R4-2016585 | CR to MAC-CE based TCI State Switching requirements for NR-U | Qualcomm Incorporated | 38.133 | 1402 | - | Rel-16 | F | NR\_unlic-Core | merged |
| R4-2016591 | Interruption windows and applicability of Scell activation/deactivation requirements for SCells operating with CCA | Qualcomm Incorporated | 38.133 | 1403 | - | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2017084 | Interruption windows and applicability of Scell activation/deactivation requirements for SCells operating with CCA | Qualcomm Incorporated | 38.133 | 1403 | 1 | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2017048 | CR on correcting SSB and RACH configuration in CSI-RS based beam failure detection and link recovery tests | Qualcomm CDMA Technologies | 38.133 | 1404 | - | Rel-15 | F | NR\_newRAT-Perf | endorsed |
| R4-2017162 | CR on correcting SSB and RACH configuration in CSI-RS based beam failure detection and link recovery tests | Qualcomm CDMA Technologies | 38.133 | 1405 | - | Rel-16 | A | NR\_RRM\_enh-Perf | withdrawn |
| R4-2017098 | CR on inter-band DAPS handover tests | Huawei, HiSilicon | 38.133 | 1406 | - | Rel-16 | B | NR\_Mob\_enh-Perf | agreed |
| R4-2017088 | Correction to timing requirements in NR-U | Ericsson | 38.133 | 1407 | - | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2017307 | CR to SSB-less SCell activation delay requirement for deactivated FR1 SCell | Qualcomm | 38.133 | 1408 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2017134 | Big CR: Introduction of Rel-16 NR UE Power Saving RRM Performance requirements (TS 38.133) | CATT | 38.133 | 1409 | - | Rel-16 | B | NR\_UE\_pow\_sav-Perf | agreed |
| R4-2017172 | Big CR: Introduction of Rel-16 NR FR1 RF WI RRM performance requirements | Huawei, HiSilicon | 38.133 | 1410 | - | Rel-16 | B | NR\_RF\_FR1-Perf | agreed |
| R4-2017252 | Big CR: NR HST RRM performance requirements | CMCC | 38.133 | 1411 | - | Rel-16 | B | NR\_HST-Core | agreed |
| R4-2017264 | Big CR: NR FR2 new FWA UE RRM requirements (TS 38.133) | Huawei, HiSilicon | 38.133 | 1412 | - | Rel-17 | B | NR\_FR2\_FWA\_Bn257\_Bn258-Core | agreed |
| R4-2017379 | [CR] NR Perf Maintenance R16 Cat A | ZTE Corporation | 38.133 | 1413 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014339 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-1 | CMCC, Huawei, HiSilicon | 38.141-1 | 0151 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | agreed |
| R4-2014350 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-1 | CMCC, Huawei, HiSilicon | 38.141-1 | 0152 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | agreed |
| R4-2014822 | CR for TS 38.141-1: Updates of NR PUSCH performance requirements for Multi-path fading channel models under high Doppler values and applicability rules. | NTT DOCOMO, INC. | 38.141-1 | 0153 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017551 | CR for TS 38.141-1: Updates of NR PUSCH performance requirements for Multi-path fading channel models under high Doppler values and applicability rules. | NTT DOCOMO, INC. | 38.141-1 | 0153 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2014939 | Introduction of 2-step RACH FRC tables in 38.141-1 | Nokia, Nokia Shanghai Bell | 38.141-1 | 0154 | - | Rel-16 | B | NR\_2step\_RACH-Perf | revised |
| R4-2017637 | Introduction of 2-step RACH FRC tables in 38.141-1 | Nokia, Nokia Shanghai Bell | 38.141-1 | 0154 | 1 | Rel-16 | B | NR\_2step\_RACH-Perf | agreed |
| R4-2015023 | FRCs for URLLC | Ericsson | 38.141-1 | 0155 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017518 | FRCs for URLLC | Ericsson | 38.141-1 | 0155 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015024 | Test requirements for 0.001% BLER | Ericsson | 38.141-1 | 0156 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017501 | Test requirements for 0.001% BLER | Ericsson | 38.141-1 | 0156 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015098 | CR for 38.141-1: URLLC testing methodology appendix | Nokia, Nokia Shanghai Bell, Intel, Ericsson, Huawei, HiSilicon | 38.141-1 | 0157 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017504 | CR for 38.141-1: URLLC testing methodology appendix | Nokia, Nokia Shanghai Bell, Intel, Ericsson, Huawei, HiSilicon | 38.141-1 | 0157 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015121 | CR on UL timing adjustment conducted performance requirement for TS 38.141-1 | Samsung | 38.141-1 | 0158 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017559 | CR on UL timing adjustment conducted performance requirement for TS 38.141-1 | Samsung | 38.141-1 | 0158 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2015360 | draftCR to 38141-1 on introducing new SUL band n99 | Huawei,HiSilicon | 38.141-1 | 0159 | - | Rel-17 | B | NR\_SUL\_UL\_n24-Core | not pursued |
| R4-2015379 | CR to TS 38.141-1 clarification on PN23 sequence generation | Nokia, Nokia Shanghai Bell | 38.141-1 | 0160 | - | Rel-15 | F | NR\_newRAT-Perf | postponed |
| R4-2015380 | CR to TS 38.141-1 clarification on PN23 sequence generation | Nokia, Nokia Shanghai Bell | 38.141-1 | 0161 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2015624 | CR to TS 38.141-1: Addition of BS conformance testing for URLLC demodulation requirements with higher BLER | Huawei, HiSilicon | 38.141-1 | 0162 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017528 | CR to TS 38.141-1: Addition of BS conformance testing for URLLC demodulation requirements with higher BLER | Huawei, HiSilicon | 38.141-1 | 0162 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015625 | CR to TS 38.141-1: Applicability of URLLC BS demodulation requirements | Huawei, HiSilicon | 38.141-1 | 0163 | - | Rel-16 | F | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017521 | CR to TS 38.141-1: Applicability of URLLC BS demodulation requirements | Huawei, HiSilicon | 38.141-1 | 0163 | 1 | Rel-16 | F | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015685 | CR to TS 38.141-1: introduction of NR band n13 | Huawei, HiSilicon | 38.141-1 | 0164 | - | Rel-17 | B | NR\_n13-Perf | agreed |
| R4-2016126 | CR to TS 38.141-1: introduction of NR-U into TS 38.141-1 | ZTE Corporation | 38.141-1 | 0165 | - | Rel-16 | B | NR\_unlic-Perf | not pursued |
| R4-2016596 | CR for 38.141-1 Introduction of conformance testing for NR HST PRACH under fading channel | Huawei, HiSilicon | 38.141-1 | 0166 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017555 | CR for 38.141-1 Introduction of conformance testing for NR HST PRACH under fading channel | Huawei, HiSilicon | 38.141-1 | 0166 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2017654 | CR to 38.141-1 Introduction of test procedure and requirements for 2-step RACH | Ericsson | 38.141-1 | 0167 | - | Rel-16 | B | NR\_2step\_RACH-Perf | revised |
| R4-2017667 | CR to 38.141-1 Introduction of test procedure and requirements for 2-step RACH | Ericsson | 38.141-1 | 0167 | 1 | Rel-16 | B | NR\_2step\_RACH-Perf | agreed |
| R4-2014340 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-2 | CMCC, Huawei, HiSilicon | 38.141-2 | 0223 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | agreed |
| R4-2014351 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-2 | CMCCCMCC, Huawei, HiSilicon | 38.141-2 | 0224 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | withdrawn |
| R4-2014355 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-2 | CMCC, Huawei, HiSilicon | 38.141-2 | 0225 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | agreed |
| R4-2014395 | CR for TS 38.141-2: Correction on half-power vertical beam width for the out of band CLTA | CATT | 38.141-2 | 0226 | - | Rel-15 | F | NR\_newRAT-Perf | not pursued |
| R4-2014396 | CR for TS 38.141-2: Correction on half-power vertical beam width for the out of band CLTA | CATT | 38.141-2 | 0227 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2014427 | CR for 38.141-2: Introduction of NR PUSCH UL timing adjustment performance requirement for scenario X | CATT | 38.141-2 | 0228 | - | Rel-16 | F | NR\_HST-Perf | revised |
| R4-2017558 | CR for 38.141-2: Introduction of NR PUSCH UL timing adjustment performance requirement for scenario X | CATT | 38.141-2 | 0228 | 1 | Rel-16 | F | NR\_HST-Perf | agreed |
| R4-2014494 | CR for 38.141-2: Add error-free feedback in demodulation requirement test setup | Nokia, Nokia Shanghai Bell | 38.141-2 | 0229 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2014509 | CR for 38.141-2: Add error-free feedback in demodulation requirement test setup | Nokia, Nokia Shanghai Bell | 38.141-2 | 0230 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2014561 | CR to TS 38.141-2: BS demodulation requirements for 2-step RACH (Annex) | Intel Corporation | 38.141-2 | 0231 | - | Rel-16 | B | NR\_2step\_RACH-Perf | revised |
| R4-2017633 | CR to TS 38.141-2: BS demodulation requirements for 2-step RACH (Annex) | Intel Corporation | 38.141-2 | 0231 | 1 | Rel-16 | B | NR\_2step\_RACH-Perf | agreed |
| R4-2014820 | CR for TS 38.141-2: Introduction of performance requirements of PUSCH repetition type A and PUSCH mapping type B for URLLC | NTT DOCOMO, INC. | 38.141-2 | 0232 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017517 | CR for TS 38.141-2: Introduction of performance requirements of PUSCH repetition type A and PUSCH mapping type B for URLLC | NTT DOCOMO, INC. | 38.141-2 | 0232 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | not pursued |
| R4-2015022 | Introduction of test procedure and requirement for 2-step RACH | Ericsson | 38.141-2 | 0233 | - | Rel-16 | B | NR\_2step\_RACH-Perf | not pursued |
| R4-2017638 | Introduction of test procedure and requirement for 2-step RACH | Ericsson | 38.141-2 | 0233 | 1 | Rel-16 | B | NR\_2step\_RACH-Perf | withdrawn |
| R4-2015025 | Introduction of URLLC 0.001% BLER requirement | Ericsson | 38.141-2 | 0234 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017502 | Introduction of URLLC 0.001% BLER requirement | Ericsson | 38.141-2 | 0234 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015099 | CR for 38.141-2: URLLC testing methodology appendix | Nokia, Nokia Shanghai Bell, Intel, Ericsson, Huawei, HiSilicon | 38.141-2 | 0235 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017505 | CR for 38.141-2: URLLC testing methodology appendix | Nokia, Nokia Shanghai Bell, Intel, Ericsson, Huawei, HiSilicon | 38.141-2 | 0235 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015361 | draftCR to 38141-2 on introducing new SUL band n96 | Huawei,HiSilicon | 38.141-2 | 0236 | - | Rel-17 | B | NR\_SUL\_UL\_n24-Core | not pursued |
| R4-2015381 | CR to TS 38.141-2 clarification on PN23 sequence generation | Nokia, Nokia Shanghai Bell | 38.141-2 | 0237 | - | Rel-15 | F | NR\_newRAT-Perf | postponed |
| R4-2015382 | CR to TS 38.141-2 clarification on PN23 sequence generation | Nokia, Nokia Shanghai Bell | 38.141-2 | 0238 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2015626 | CR to TS 38.141-2: Addition of BS conformance testing for FR2 URLLC PUSCH repetition Type A | Huawei, HiSilicon | 38.141-2 | 0239 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017522 | CR to TS 38.141-2: Addition of BS conformance testing for FR2 URLLC PUSCH repetition Type A | Huawei, HiSilicon, NTT DoCoMo | 38.141-2 | 0239 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015627 | CR to TS 38.141-2: FRC for FR1 URLLC BS performance requirements | Huawei, HiSilicon | 38.141-2 | 0240 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017506 | CR to TS 38.141-2: FRC for FR1 URLLC BS performance requirements | Huawei, HiSilicon | 38.141-2 | 0240 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2015686 | CR to TS 38.141-2: introduction of NR band n13 | Huawei, HiSilicon | 38.141-2 | 0241 | - | Rel-17 | B | NR\_n13-Perf | agreed |
| R4-2015716 | CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics | Ericsson | 38.141-2 | 0242 | - | Rel-15 | F | NR\_newRAT-Perf | not pursued |
| R4-2017587 | CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics | Ericsson | 38.141-2 | 0242 | 1 | Rel-15 | F | NR\_newRAT-Perf | withdrawn |
| R4-2015717 | CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics | Ericsson | 38.141-2 | 0243 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2015844 | Adding MCS12 and 30% throughput requirements and corresponding FRC tables for FR2 PUSCH performance in TS38.141-2 v15.7.0 | Ericsson | 38.141-2 | 0244 | - | Rel-15 | B | NR\_newRAT-Perf | not pursued |
| R4-2015846 | Additional test cases and FRC tables for HST PUSCH | Ericsson | 38.141-2 | 0245 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017553 | Additional test cases and FRC tables for HST PUSCH | Ericsson | 38.141-2 | 0245 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2016006 | CR on FR2 requirements for PUSCH mapping Type B with low number of symbols | Intel Corporation | 38.141-2 | 0246 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2017523 | CR on FR2 requirements for PUSCH mapping Type B with low number of symbols | Intel Corporation, NTT DoCoMo | 38.141-2 | 0246 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | agreed |
| R4-2016070 | CR to TS 38.141-2 - Update CLTA definition, Rel-15 | Huawei | 38.141-2 | 0247 | - | Rel-15 | F | NR\_newRAT-Perf | not pursued |
| R4-2016071 | CR to TS 38.141-2 - Update CLTA definition, Rel-16 | Huawei | 38.141-2 | 0248 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2016152 | CR to 38.141-2: Annex C correction on frequency range of FR2 TT table (C.2) | Keysight Technologies UK Ltd | 38.141-2 | 0249 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2017592 | CR to 38.141-2: Annex C correction on frequency range of FR2 TT table (C.2) | Keysight Technologies UK Ltd | 38.141-2 | 0249 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2016153 | CR to 38.141-2: Annex C correction on frequency range of FR2 TT table (C.2) | Keysight Technologies UK Ltd | 38.141-2 | 0250 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2016206 | CR to 38.141-2: Correction to test system uncertainty | Nokia, Nokia Shanghai Bell | 38.141-2 | 0251 | - | Rel-16 | F | NR\_n259-Perf | agreed |
| R4-2016286 | CR to TS 38.141-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | 38.141-2 | 0252 | - | Rel-15 | F | NR\_newRAT-Perf | not pursued |
| R4-2016287 | CR to TS 38.141-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | 38.141-2 | 0253 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2016347 | CR to 38.141-2 on Category B OTA spurious emissions for Band n257 | Ericsson | 38.141-2 | 0254 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2016348 | CR to 38.141-2 on Category B OTA spurious emissions for Band n257 | Ericsson | 38.141-2 | 0255 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2016597 | CR for 38.141-2 Introduction of conformance testing for NR HST PRACH under fading channel | Huawei, HiSilicon | 38.141-2 | 0256 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017556 | CR for 38.141-2 Introduction of conformance testing for NR HST PRACH under fading channel | Huawei, HiSilicon | 38.141-2 | 0256 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2017655 | CR to 38.141-2: Annex C correction on frequency range of FR2 TT table (C.2) | Keysight Technologies UK Ltd | 38.141-2 | 0257 | - | Rel-16 | F | TEI16, NR\_newRAT-Perf | agreed |
| R4-2017653 | CR on MsgA PUSCH radiated performance requirement for TS 38.141-2 | Samsung | 38.141-2 | 0258 | - | Rel-16 | B | NR\_2step\_RACH-Perf | agreed |
| R4-2015790 | CR on Link recovery for IAB-MT | Huawei, HiSilicon | 38.174 | 0001 | - | Rel-16 | F | NR\_IAB-Core | merged |
| R4-2015791 | CR on RLM for IAB-MT | Huawei, HiSilicon | 38.174 | 0002 | - | Rel-16 | F | NR\_IAB-Core | merged |
| R4-2016170 | Symbols, abbreviations and definitions for IAB RRM in 38.174 | Ericsson | 38.174 | 0003 | - | Rel-16 | F | NR\_IAB-Core | revised |
| R4-2017113 | Symbols, abbreviations and definitions for IAB RRM in 38.174 | Ericsson | 38.174 | 0003 | 1 | Rel-16 | F | NR\_IAB-Core | endorsed |
| R4-2016172 | Specification structure for IAB-MT RRM test cases in 38.174 | Ericsson | 38.174 | 0004 | - | Rel-16 | B | NR\_IAB-Perf | revised |
| R4-2017117 | Specification structure for IAB-MT RRM test cases in 38.174 | Ericsson | 38.174 | 0004 | 1 | Rel-16 | B | NR\_IAB-Perf | endorsed |
| R4-2016382 | Correction on IAB RRM requirements in TS 38.174 | Nokia, Nokia Shanghai Bell | 38.174 | 0005 | - | Rel-16 | F | NR\_IAB-Core | revised |
| R4-2017114 | Correction on IAB RRM requirements in TS 38.174 | Nokia, Nokia Shanghai Bell | 38.174 | 0005 | 1 | Rel-16 | F | NR\_IAB-Core | endorsed |
| R4-2017664 | Correction CR on TS38.174 | Qualcomm | 38.174 | 0006 | - | Rel-16 | - | NR\_IAB-Core | agreed |
| R4-2015026 | CR to TS 38.175: IAB definition | ZTE Corporation | 38.175 | 0001 | - | Rel-16 | F | NR\_IAB-Core | agreed |
| R4-2015027 | CR to TS 38.175: Radiated emission, IAB | ZTE Corporation | 38.175 | 0002 | - | Rel-16 | F | NR\_IAB-Core | revised |
| R4-2017442 | CR to TS 38.175: Radiated emission, IAB | ZTE Corporation, Ericsson | 38.175 | 0002 | 1 | Rel-16 | F | NR\_IAB-Core | agreed |
| R4-2015106 | CR to TS 38.175 on Voltage dips and interruptions, Release 16 | Ericsson | 38.175 | 0003 | - | Rel-16 | F | NR\_IAB-Core | revised |
| R4-2017444 | CR to TS 38.175 on Voltage dips and interruptions, Release 16 | Ericsson | 38.175 | 0003 | 1 | Rel-16 | F | NR\_IAB-Core | agreed |
| R4-2015108 | CR to TS 38.175 on Exclusion Bands | Ericsson | 38.175 | 0004 | - | Rel-16 | B | NR\_IAB-Core | not pursued |
| R4-2015110 | CR to TS 38.175 on IAB EMC Emission | Ericsson | 38.175 | 0005 | - | Rel-16 | B | NR\_IAB-Core | merged |
| R4-2015112 | CR to TS 38.175 on Spatial Exclusion for IAB EMC Radiated Immunity test | Ericsson | 38.175 | 0006 | - | Rel-16 | B | NR\_IAB-Core | revised |
| R4-2017443 | CR to TS 38.175 on Spatial Exclusion for IAB EMC Radiated Immunity test | Ericsson | 38.175 | 0006 | 1 | Rel-16 | B | NR\_IAB-Core | not pursued |
| R4-2015114 | CR to TS 38.175 on IAB EMC performance requirements | Ericsson | 38.175 | 0007 | - | Rel-16 | B | NR\_IAB-Perf | revised |
| R4-2017446 | CR to TS 38.175 on IAB EMC performance requirements | Ericsson | 38.175 | 0007 | 1 | Rel-16 | B | NR\_IAB-Perf | agreed |
| R4-2014329 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | 38.307 | 0024 | 2 | Rel-17 | B | DSS\_LTE\_B40\_NR\_Bn40-Core | revised |
| R4-2016944 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | 38.307 | 0024 | 3 | Rel-17 | B | DSS\_LTE\_B40\_NR\_Bn40-Core | agreed |
| R4-2014600 | CR on adding NR ovelapping bands list in TS38.307 in Rel-15 | LG Electronics France | 38.307 | 0031 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2016846 | CR on adding NR ovelapping bands list in TS38.307 in Rel-15 | LG Electronics France | 38.307 | 0031 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2014620 | CR on adding NR ovelapping bands list in TS38.307 in Rel-16 | LG Electronics France | 38.307 | 0032 | - | Rel-16 | F | NR\_newRAT-Core | revised |
| R4-2016847 | CR on adding NR ovelapping bands list in TS38.307 in Rel-16 | LG Electronics France | 38.307 | 0032 | 1 | Rel-16 | F | NR\_newRAT-Core | agreed |
| R4-2014695 | CR on release independent for Rel.16 NR HST RRM requirements | CMCC | 38.307 | 0033 | - | Rel-15 | B | NR\_HST-Perf | revised |
| R4-2017243 | CR on release independent for Rel.16 NR HST RRM requirements | CMCC | 38.307 | 0033 | 1 | Rel-15 | B | NR\_HST-Perf | agreed |
| R4-2014696 | CR on release independent for Rel.16 NR HST UE demodulation requirements | CMCC | 38.307 | 0034 | - | Rel-15 | B | NR\_HST-Perf | revised |
| R4-2017543 | CR on release independent for Rel.16 NR HST UE demodulation requirements | CMCC | 38.307 | 0034 | 1 | Rel-15 | B | NR\_HST-Perf | agreed |
| R4-2014697 | CR on release independent for Rel.16 NR HST RRM requirements | CMCC | 38.307 | 0035 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017244 | CR on release independent for Rel.16 NR HST RRM requirements | CMCC | 38.307 | 0035 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2014698 | CR on release independent for Rel.16 NR HST UE demodulation requirements | CMCC | 38.307 | 0036 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2017544 | CR on release independent for Rel.16 NR HST UE demodulation requirements | CMCC | 38.307 | 0036 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2015036 | CR to TS 38.307 on the definition of the duplex-mode for the band configurations | ZTE Corporation, CHTTL | 38.307 | 0037 | - | Rel-15 | F | LTE\_NR\_DC\_CA\_enh-Core | not pursued |
| R4-2015037 | CR to TS 38.307 on the definition of the duplex-mode for the band configurations | ZTE Corporation, CHTTL | 38.307 | 0038 | - | Rel-16 | A | LTE\_NR\_DC\_CA\_enh-Core | not pursued |
| R4-2015176 | CR to TS 38.307 Release independence support of new channel bandwidth from Rel-15 | ZTE Wistron Telecom AB | 38.307 | 0039 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2015856 | CR to TS 38.307 on release independent update for the Rel.16 EN-DC and NR CA/DC | CHTTL, ZTE Corporation, Dish, SGS Wireless | 38.307 | 0040 | - | Rel-16 | B | DC\_R16\_1BLTE\_1BNR\_2DL2UL-Core, DC\_R16\_2BLTE\_1BNR\_3DL2UL-Core, DC\_R16\_3BLTE\_1BNR\_4DL2UL-Core, DC\_R16\_4BLTE\_1BNR\_5DL2UL-Core, DC\_R16\_5BLTE\_1BNR\_6DL2UL-Core, DC\_R16\_xBLTE\_2BNR\_yDL2UL-Core, NR\_SUL\_combos\_R16-Core, NR\_CA\_R16\_intra-Core, NR\_CADC\_R16\_2BDL\_xBUL-Core | revised |
| R4-2016848 | CR to TS 38.307 on release independent update for the Rel.16 EN-DC and NR CA/DC | CHTTL, ZTE Corporation, Dish, SGS Wireless | 38.307 | 0040 | 1 | Rel-16 | B | DC\_R16\_1BLTE\_1BNR\_2DL2UL-Core, DC\_R16\_2BLTE\_1BNR\_3DL2UL-Core, DC\_R16\_3BLTE\_1BNR\_4DL2UL-Core, DC\_R16\_4BLTE\_1BNR\_5DL2UL-Core, DC\_R16\_5BLTE\_1BNR\_6DL2UL-Core, DC\_R16\_xBLTE\_2BNR\_yDL2UL-Core, NR\_SUL\_combos\_R16-Core, NR\_CA\_R16\_intra-Core, NR\_CADC\_R16\_2BDL\_xBUL-Core | agreed |
| R4-2016987 | CR to TS 38.307 on Release independence of FDD-TDD EN-DC High Power UE | CHTTL, China Unicom | 38.307 | 0041 | - | Rel-16 | B | ENDC\_UE\_PC2\_R17\_NR\_TDD-Core | agreed |
| R4-2014752 | Correction CR on TR38.809 | Samsung | 38.809 | 0001 | - | Rel-16 | F | NR\_IAB-Core | revised |
| R4-2017473 | Correction CR on TR38.809 | Samsung | 38.809 | 0001 | 1 | Rel-16 | F | NR\_IAB-Core | agreed |
| R4-2015966 | CR to TR 38.820: correction in the NF analysis for NR BS, Rel-16 | Huawei | 38.820 | 0001 | - | Rel-16 | F | TEI16, FS\_7to24GHz\_NR | not pursued |
| R4-2014289 | Addition of Time Domain Alternative for Spatial Correlation Validation | Spirent Communications | 38.827 | 0002 | - | Rel-16 | B | FS\_NR\_MIMO\_OTA\_test | revised |
| R4-2017581 | Addition of Time Domain Alternative for Spatial Correlation Validation | Spirent Communications | 38.827 | 0002 | 1 | Rel-16 | B | FS\_NR\_MIMO\_OTA\_test | revised |
| R4-2017658 | Addition of Time Domain Alternative for Spatial Correlation Validation | Spirent Communications | 38.827 | 0002 | 2 | Rel-16 | B | FS\_NR\_MIMO\_OTA\_test | agreed |
| R4-2016211 | Update of FR2 probe configuration | Keysight Technologies UK Ltd | 38.827 | 0003 | - | Rel-16 | F | FS\_NR\_MIMO\_OTA\_test | agreed |
| R4-2016228 | Number of Slots for NR MIMO OTA testing | vivo, CAICT | 38.827 | 0004 | - | Rel-16 | F | FS\_NR\_MIMO\_OTA\_test | revised |
| R4-2017582 | Number of Slots for NR MIMO OTA testing | vivo, CAICT | 38.827 | 0004 | 1 | Rel-16 | F | FS\_NR\_MIMO\_OTA\_test | agreed |
| R4-2016544 | TP to 38.827 on channel model rotations | Huawei, HiSilicon | 38.827 | 0005 | - | Rel-16 | F | NR\_MIMO\_OTA | not pursued |
| R4-2017639 | TP to 38.827 on channel model rotations | Huawei, HiSilicon | 38.827 | 0005 | 1 | Rel-16 | F | NR\_MIMO\_OTA | withdrawn |
| R4-2016546 | pCR to 38.827 on base station beamforming configuration | Huawei, HiSilicon | 38.827 | 0006 | - | Rel-16 | F | NR\_MIMO\_OTA | not pursued |
| R4-2017640 | CR to 38.827 on base station beamforming configuration | Huawei, HiSilicon | 38.827 | 0006 | 1 | Rel-16 | F | NR\_MIMO\_OTA | withdrawn |
| R4-2016586 | CR for 38.827 on corrections | Huawei, HiSilicon | 38.827 | 0007 | - | Rel-16 | F | NR\_MIMO\_OTA-Core | revised |
| R4-2017641 | CR for 38.827 on corrections | Huawei, HiSilicon | 38.827 | 0007 | 1 | Rel-16 | F | NR\_MIMO\_OTA-Core | agreed |
| R4-2014924 | CR to TR 38.831 on beam correspondence corrections | Apple Inc. | 38.831 | 0001 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | revised |
| R4-2016822 | CR to TR 38.831 on beam correspondence corrections | Apple Inc. | 38.831 | 0001 | 1 | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | agreed |
| R4-2015088 | CR to TR 38.831 to include DL CA agreement | Nokia, Nokia Shanghai Bell | 38.831 | 0002 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | revised |
| R4-2016827 | CR to TR 38.831 to include DL CA agreement | Nokia, Nokia Shanghai Bell | 38.831 | 0002 | 1 | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | agreed |
| R4-2014325 | Correction on update 5G V2X UE RF requirements in TR38.886 | LG Electronics France | 38.886 | 0004 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2016804 | Correction on update 5G V2X UE RF requirements in TR38.886 | LG Electronics France | 38.886 | 0004 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2014416 | CR for 38.886, Time mask for TDM between NR V2X and LTE V2X in ITS band | CATT | 38.886 | 0005 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2016809 | CR for 38.886, Time mask for TDM between NR V2X and LTE V2X in ITS band | CATT | 38.886 | 0005 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |

Annex C: Lists of liaisons

### C1: Incoming liaison statements

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Document | Original | Title | From | Decision | Reply TDoc |
| R4-2014147 | R1-2007136 | LS on updated Rel-16 RAN1 UE features lists for NR | RAN1 | noted | (none) |
| R4-2014148 | R1-2007139 | LS on updated Rel-16 RAN1 UE features list for LTE | RAN1 | noted | (none) |
| R4-2014149 | R1-2007327 | LS on updated Rel-16 RAN1 UE features lists for NR | RAN1 | noted | (none) |
| R4-2014150 | R1-2007329 | LS on updated Rel-16 RAN1 UE features lists for LTE | RAN1 | noted | (none) |
| R4-2014151 | R1-2007339 | Reply LS on UE capability | RAN1 | noted | (none) |
| R4-2014152 | R1-2007419 | LS on evaluation methodology for connected mode UE power saving enhancements | RAN1 | noted | (none) |
| R4-2014153 | R1-2007424 | Reply LS on UE declaring beam failure due to LBT failures during active TCI switching | RAN1 | noted | (none) |
| R4-2014154 | R1-2007425 | LS on evaluation methodology for UE power saving enhancements | RAN1 | noted | (none) |
| R4-2014155 | R2-2008149 | Reply LS on Rel-16 UE feature lists for NR DAPS | RAN2 | noted | (none) |
| R4-2014156 | R2-2008220 | Reply LS on exchange of information related to SRS-RSRP measurement resource configuration for UE-CLI | RAN2 | noted | (none) |
| R4-2014157 | R2-2008234 | LS to RAN4 on measurement requirement for eMTC UE in RRC\_INACTIVE | RAN2 | noted | (none) |
| R4-2014158 | R2-2008350 | LS on UE capability for V2X | RAN2 | noted | (none) |
| R4-2014159 | R2-2008635 | LS on simultaneous Rx/Tx for inter-band NR-DC | RAN2 | noted | (none) |
| R4-2014160 | R2-2008662 | LS on cell-grouping UE capability for synchronous NR-DC | RAN2 | noted | (none) |
| R4-2016598 |  | FREQUENCY ARRANGEMENTS FOR IMT IN THE BAND 470 | APT Wireless Group | noted | (none) |
| R4-2017799 |  | REPLY LIAISON STATEMENT TO 3GPP RAN4 | ITU-R Working Party (WP) 5D | noted | (none) |
| R4-2017800 |  | LS to 3GPP RAN WG4 on Release 15 of the IMT harmonised standard | MSG TFES | noted | (none) |
| R4-2017801 | R1-2009385 | Reply LS on UE capability on wideband carrier operation for NR-U | RAN1 | noted | (none) |
| R4-2017802 | R1-2009444 | Reply LS on number of configurable CSI-RS resources per MO | RAN1 | noted | (none) |
| R4-2018002 | R2-2009609 | Reply LS on updated Rel-16 LTE parameter lists | RAN2 | noted | (none) |
| R4-2018003 | R2-2010927 | Reply LS on definition of NR V2X con-current operation | RAN2 | noted | (none) |
| R4-2018004 | R2-2011023 | Reply LS on FR1 intra-band UL CA UE capability | RAN2 | noted | (none) |

### C2: Outgoing liaison statements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Document | Title | To | Cc | reply to i/c LS |
| R4-2014282 | LS on new per-UE MG for NR positioning | RAN2 | - |  |
| R4-2016369 | Draft LS to ECC SE21 on Spurious emission limits for AAS BS in 6.425 | ECC SE21 | RAN |  |
| R4-2016779 | LS to RAN5 on nominal channel spacing calculation for two carriers at band n41 with 40MHz and 80MHz channel bandwidths | RAN5 | - |  |
| R4-2016784 | Reply LS on structure of NR CA reference sensitivity requirements in 38.101-1 | RAN5 | - | R5-202804 |
| R4-2016817 | LS on DC location reporting for intra-band UL CA | RAN2 | RAN1 |  |
| R4-2016849 | LS on updated Rel-16 RAN4 UE features lists for NR and LTE | RAN2, RAN1 | - |  |
| R4-2016876 | LS for FR2 FWA power class | RAN2 | - |  |
| R4-2016909 | LS on removing restriction on configuring UL MIMO for SUL band | RAN2 | RAN1 |  |
| R4-2016928 | LS on PN models | RAN1 | - | R1-200519 |
| R4-2016988 | LS to RAN2 on UE simultaneous Rx/Tx capability | RAN2 | - |  |
| R4-2017040 | LS on RRC based BWP switching for SCell | RAN2 | - |  |
| R4-2017329 | LS on TCI state indication at Direct SCell activation | RAN2, RAN1 | - | - |
| R4-2017381 | LS on measuring CSI-RS during SCell activation. | RAN1 | - |  |
| R4-2017390 | LS on RAN4 agreements for MR-DC Idle mode CA measurements | RAN2 | - |  |
| R4-2017583 | LS on FR1 MIMO OTA | CTIA, CCSA | - |  |
| R4-2017803 | LS on Rel-16 mandatory RRM requirements | RAN2 | - |  |
| R4-2017811 | LS on Rel-16 RAN4 Clarification for UE Antenna Connector Interpretation | 5GAA | RAN5 |  |
| R4-2017839 | LS on SL switching priority | RAN1, RAN2 | - |  |
| R4-2017846 | LS to RAN2 on 35 and 45 MHz channel bandwidths | RAN2 | - |  |
| R4-2017847 | Reply LS on cell-grouping UE capability for synchronous NR-DC | RAN1, RAN2 | - | R2-2008662 |

### Annex E: List of draft Technical Specifications and Reports

|  |  |  |  |
| --- | --- | --- | --- |
| Document | Spec | vers | Doc title |
| R4-2014300 | 36.717-03-02 | 0.2.0 | TR 36.717-03-02 v0.2.0 TR Update for LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL in Rel-17 |
| R4-2014304 | 37.717-11-21 | 0.2.0 | TR 37.717-11-21 v0.2.0 TR update: LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17 |
| R4-2014380 | 38.717-04-02 | 0.1.0 | TR38.717-04-02 update version 0.2.0 |
| R4-2014460 | 38.717-03-01 | 0.1.0 | TR 38.717-03-01 on Rel-17 NR inter-band Carrier Aggregation (CA) for 3 Down Link (DL) / 1 Up Link (UL) |
| R4-2014649 | 37.826 | 0.0.1 | TR Skeleton for TR 37.826 v0.0.1 ENDC\_UE\_PC2\_R17\_NR\_TDD |
| R4-2014786 | 37.717-11-11 | 0.1.0 | TR 37.717-11-11 v0.2.0 Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL) |
| R4-2014801 | 37.717-00-00 | 0.1.0 | TR 37.717-00-00 v0.2.0 |
| R4-2014805 | 38.717-05-01 | 0.1.0 | TR 38.717-05-01 v0.2.0 |
| R4-2014967 | 37.717-51-11 | 0.0.1 | Skeleton on TR 37.717-51-11\_0.0.1 |
| R4-2014968 | 37.717-51-11 | 0.1.0 | TR 37.717-51-11\_0.1.0 |
| R4-2014969 | 37.717-21-22 | 0.0.1 | Skeleton on TR 37.717-21-22\_0.0.1 |
| R4-2014970 | 37.717-21-22 | 0.1.0 | TR 37.717-21-22\_0.1.0 |
| R4-2015065 | 37.717-33 | 0.1.0 | TR 37.717-33 v0.2.0 |
| R4-2015067 | 37.717-11-31 | 0.2.0 | TR 37.717-11-31\_v0.2.0 |
| R4-2015184 | 38.717-02-01 | 0.2.0 | TR 38.717-02-01 v0.2.0 |
| R4-2015185 | 38.717-03-02 | 0.2.0 | TR 38.717-03-02 v0.2.0 |
| R4-2015216 | 37.717-41-11 | 0.2.0 | draftTR 37.717-41-11 v0.2.0 |
| R4-2015675 | 38.921 | 0.2.0 | TR 38.921 V 0.2.0 |
| R4-2015704 | 37.717-21-11 | 0.2.0 | TR 37.717-21-11 V0.2.0 for DC of 2 LTE band and 1 NR band |
| R4-2015924 | 38.717-01-01 | 0.1.0 | TR 38.717-01-01 v0.2.0 Rel-17 NR Intra-band |
| R4-2015925 | 37.717-31-11 | 0.1.0 | TR 37.717-31-11 v0.2.0 Rel-17 DC combinations LTE 3DL and one NR band |
| R4-2015926 | 38.717-04-01 | 0.1.0 | TR 38.717-04-01 v0.2.0 Rel-17 NR Inter-band 4 bands CA |
| R4-2016183 | 36.717-04-01 | 0.2.0 | TR 36.717-04-01 v0.2.0 |
| R4-2016216 | 38.151 | 0.1.0 | TS 38.151 v0.1.0 NR MIMO OTA requirements |
| R4-2016234 | 36.717-02-01 | 0.1.0 | TR 36.717-02-01 Rel-17 LTE inter-band CA for 2 bands DL and 1 band UL CA |
| R4-2017663 | 38.884 | 0.1.0 | Draft TR38.884 Study on enhanced test methods for FR2 NR UEs v0.1.0 |
| R4-2017840 | 37.826 | 0.1.0 | TR Skeleton for TR 37.826 v0.1.0 ENDC\_UE\_PC2\_R17\_NR\_TDD |

### Annex H: List of participants

|  |  |  |
| --- | --- | --- |
| Name | Representing | Status (OP) |
| ABDELGELIL, Mahmoud | Samsung Electronics Co., Ltd | 3GPPMEMBER (TTA) |
| ABDI ABYANEH, mohammad | Huawei Technologies France | 3GPPMEMBER (ETSI) |
| AGATA, Mikiya | KDDI Corporation | 3GPPMEMBER (ARIB) |
| AHMADI, Sassan | Xilinx Ireland | 3GPPMEMBER (ETSI) |
| ALIANI, Maqbool | Ligado Networks | 3GPPMEMBER (ETSI) |
| ALMEIDA, Erika | Nokia Solutions & Networks (I) | 3GPPMEMBER (TSDSI) |
| ANGELOW, Iwajlo | Nokia Italy | 3GPPMEMBER (ETSI) |
| ARTYOM, Putilin | Intel Technology Poland SP Zoo | 3GPPMEMBER (ETSI) |
| ATAK, Oguzhan | ASELSAN | 3GPPMEMBER (ETSI) |
| AXMON, Joakim | Ericsson España S.A. | 3GPPMEMBER (ETSI) |
| AZCUY, Frank | Charter Communications, Inc | 3GPPMEMBER (ATIS) |
| BABA, Hiroyuki | Anritsu Corporation | 3GPPMEMBER (ARIB) |
| BACON, Peter | Murata Manufacturing Co Ltd. | 3GPPMEMBER (ARIB) |
| BAI, Lu | CHENGDU TD TECH LTD. | 3GPPMEMBER (CCSA) |
| BAKER, Matthew | Nokia UK | 3GPPMEMBER (ETSI) |
| BASAIER, JIALADE | China Unicom | 3GPPMEMBER (CCSA) |
| BELOV, Dmitry | Intel Corporation SAS | 3GPPMEMBER (ETSI) |
| BEN TOVIM, Erez | Sequans Communications | 3GPPMEMBER (ETSI) |
| BERGLJUNG, Christian | L.M. Ericsson Limited | 3GPPMEMBER (ETSI) |
| BHAUMIK, Saswata | NXP Semiconductors Netherlands | 3GPPMEMBER (ETSI) |
| BOIXADERA, Francesc | MediaTek Inc. | 3GPPMEMBER (ETSI) |
| BOLOTIN, Ilya | Intel Belgium SA/NV | 3GPPMEMBER (ETSI) |
| BORSATO, Ronald | AT&T | 3GPPMEMBER (ATIS) |
| BRIA, Aurelian | Ericsson LM | 3GPPMEMBER (ETSI) |
| BRUNEL, Dominique | Skyworks Solutions Inc. | 3GPPMEMBER (ETSI) |
| CABRERA-MERCADER, Carlos | Qualcomm Incorporated | 3GPPMEMBER (ATIS) |
| CALLENDER, Christopher | Ericsson Limited | 3GPPMEMBER (ETSI) |
| CAO, Aijun | ZTE Wistron Telecom AB | 3GPPMEMBER (ETSI) |
| CARRION, Inma | CommScope Technologies AG | 3GPPMEMBER (ETSI) |
| CATMUR, Richard | Spirent Communications | 3GPPMEMBER (ETSI) |
| CAUDURO DIAS DE PAIVA, Rafael | Nokia Belgium | 3GPPMEMBER (ETSI) |
| CEROVIC, Stefan | Orange Romania | 3GPPMEMBER (ETSI) |
| CHABRAK, Karim | Deutsche Telekom AG | 3GPPMEMBER (ETSI) |
| CHAMAILLARD, Baptiste | THALES | 3GPPMEMBER (ETSI) |
| CHAN, Yee Sin | Facebook | 3GPPMEMBER (ETSI) |
| CHAPMAN, Thomas | Ericsson Hungary Ltd | 3GPPMEMBER (ETSI) |
| CHEN, jingjing | China Mobile (Hangzhou) Inf. | 3GPPMEMBER (CCSA) |
| CHEN, Xiang (Steven) | Apple (UK) Limited | 3GPPMEMBER (ETSI) |
| CHEN, Yueji | Nokia Belgium | 3GPPMEMBER (ETSI) |
| CHERVYAKOV, Andrey | Intel | 3GPPMEMBER (ATIS) |
| CHHIBBER, Sachin | Ligado Networks | 3GPPMEMBER (ETSI) |
| CHIBA, Tsunehiko | Rakuten Mobile, Inc | 3GPPMEMBER (ARIB) |
| CHOKSI, Ojas | Ligado Networks | 3GPPMEMBER (ETSI) |
| CHU, Jeremy | Telstra Corporation Limited | 3GPPMEMBER (ETSI) |
| CHUBERRE, Nicolas | THALES | 3GPPMEMBER (ETSI) |
| COAN, Philip | Qualcomm Austria RFFE GmbH | 3GPPMEMBER (ETSI) |
| COMSA, Virgil | InterDigital Communications | 3GPPMEMBER (ATIS) |
| COOPER, Paul | Qorvo | 3GPPMEMBER (ETSI) |
| CUI, Jie | Apple Poland Sp. z.o.o. | 3GPPMEMBER (ETSI) |
| DALSGAARD, Lars | Nokia Corporation | 3GPPMEMBER (ETSI) |
| DESAI, Vipul | Futurewei Technologies | 3GPPMEMBER (ATIS) |
| DIETRICH, Christiane | Nomor Research GmbH | 3GPPMEMBER (ETSI) |
| DIMNIK, Riikka | Nokia Solutions & Networks (I) | 3GPPMEMBER (TSDSI) |
| DOHOPOLSKI, Joe | BROADCOM CORPORATION | 3GPPMEMBER (ETSI) |
| DOOLEY, John | GLOBALSTAR Inc. | 3GPPMEMBER (ETSI) |
| DU, Hao | vivo Mobile Communication Co., | 3GPPMEMBER (CCSA) |
| DU, Lei | Nokia Korea | 3GPPMEMBER (TTA) |
| DUTTA, Santanu | Ligado Networks | 3GPPMEMBER (ETSI) |
| EDWARDS, Keith | Eutelsat S.A. | 3GPPMEMBER (ETSI) |
| EL JAAFARI, Mohamed | THALES | 3GPPMEMBER (ETSI) |
| EL MOUMOUHI, Sanaa | Eutelsat S.A. | 3GPPMEMBER (ETSI) |
| ELFSTROM, Torbjorn | Ericsson India Private Limited | 3GPPMEMBER (TSDSI) |
| EVERAERE, Dominique | Ericsson Limited | 3GPPMEMBER (ETSI) |
| FABIEN, Jean-Aicard | NTIA | 3GPPMEMBER (ATIS) |
| FENG, Sanjun | vivo Mobile Communication (H) | 3GPPMEMBER (CCSA) |
| FERNANDEZ MARTOS, Flores | Keysight Technologies UK Ltd | 3GPPMEMBER (ETSI) |
| FERNANDO, Chan | Qualcomm Incorporated | 3GPPMEMBER (ATIS) |
| FERRUS, Ramon | Sateliot | 3GPPMEMBER (ETSI) |
| FLORDELIS, Jose | Sony Corporation | 3GPPMEMBER (ARIB) |
| FONG, Gene | Qualcomm Korea | 3GPPMEMBER (TTA) |
| FORTES LOPEZ, Jose M. | ROHDE & SCHWARZ | 3GPPMEMBER (ETSI) |
| FRANK, Colin | Motorola Mobility France S.A.S | 3GPPMEMBER (ETSI) |
| FRANK, Dominik | Ericsson LM | 3GPPMEMBER (ETSI) |
| FRITZE, Stefan | Ericsson LM | 3GPPMEMBER (ETSI) |
| FU, Huanren | Shanghai Chen Si Electronics | 3GPPMEMBER (CCSA) |
| FU, Ting | Beijing Xiaomi Software Tech | 3GPPMEMBER (CCSA) |
| FU, Yanze | Datang Linktester Technology | 3GPPMEMBER (CCSA) |
| FUSHIKI, Masashi | SoftBank Corp. | 3GPPMEMBER (ARIB) |
| GAN, Jiansong | HuaWei Technologies Co., Ltd | 3GPPMEMBER (CCSA) |
| GAO, Qiubin | CICT | 3GPPMEMBER (ETSI) |
| GAO, YUAN | Morningcore Technology Co.,Ltd | 3GPPMEMBER (CCSA) |
| GHEORGHIU, Valentin | Qualcomm Incorporated | 3GPPMEMBER (ATIS) |
| GOLEBIOWSKI, Bartlomiej | Nokia Poland | 3GPPMEMBER (ETSI) |
| GONUGUNTLA, Venkatarao | NEC Corporation | 3GPPMEMBER (ETSI) |
| GONZALEZ G., David | Continental Automotive GmbH | 3GPPMEMBER (ETSI) |
| GRANT, Marc | AT&T GNS Belgium SPRL | 3GPPMEMBER (ETSI) |
| GUO, Chunxia | China Mobile (Suzhou) Software | 3GPPMEMBER (CCSA) |
| GUO, Li | Dongguan OPPO Precision Elec. | 3GPPMEMBER (CCSA) |
| GUO, Qiuge | CATT | 3GPPMEMBER (ETSI) |
| GUO, Shengxiang | Beijing Xiaomi Mobile Software | 3GPPMEMBER (CCSA) |
| GUPTA, Ashish | Reliance Jio | 3GPPMEMBER (TSDSI) |
| GUPTA, SHEIFALI | Qualcomm Technologies Int | 3GPPMEMBER (ETSI) |
| GURELLI, Mehmet | Qualcomm Incorporated | 3GPPMEMBER (ATIS) |
| HAN, Bin | Qualcomm Wireless GmbH | 3GPPMEMBER (ETSI) |
| HAN, Jing | Huawei Technologies R&D UK | 3GPPMEMBER (ETSI) |
| HARPER, Colby | Pivotal Commware | 3GPPMEMBER (ATIS) |
| HARRIS, Paul | VODAFONE Group Plc | 3GPPMEMBER (ETSI) |
| HASEGAWA, Yoshiaki | Murata Manufacturing Co Ltd. | 3GPPMEMBER (ARIB) |
| HAUSTEIN, Thomas | Fraunhofer HHI | 3GPPMEMBER (ETSI) |
| HE, Michael | Qualcomm CDMA Technologies | 3GPPMEMBER (ETSI) |
| HEJSELBAEK, Johannes | Nokia Denmark | 3GPPMEMBER (ETSI) |
| HERTEL, Thorsten | Keysight Technologies UK Ltd | 3GPPMEMBER (ETSI) |
| HIGUCHI, Shoichi | NTT DOCOMO INC. | 3GPPMEMBER (ARIB) |
| HITOMI, Shinya | Murata Manufacturing Co Ltd. | 3GPPMEMBER (ARIB) |
| HOFMANN, Alexander | Fraunhofer IIS | 3GPPMEMBER (ETSI) |
| HOFMANN, Juergen | Nokia Germany | 3GPPMEMBER (ETSI) |
| HSIEH, Bo-Han | CHTTL | 3GPPMEMBER (ETSI) |
| HSIEH, Ming-Yu | MediaTek Inc. | 3GPPMEMBER (ETSI) |
| HU, Roy | Chengdu OPPO Mobile Com. corp. | 3GPPMEMBER (CCSA) |
| HU, Ziquan | Xiaomi Communications | 3GPPMEMBER (CCSA) |
| HUANG, Chu-Hsiang | Qualcomm communications-France | 3GPPMEMBER (ETSI) |
| HUANG, Clement | Google Inc. | 3GPPMEMBER (ATIS) |
| HUANG, Dinhwa | MediaTek (Shenzhen) Inc. | 3GPPMEMBER (CCSA) |
| HUANG, Rui | Intel Technology India Pvt Ltd | 3GPPMEMBER (TSDSI) |
| HUANG, Yingpei | Shenzhen YZF Network Technolog | 3GPPMEMBER (CCSA) |
| HUSS, Fabian | Ericsson GmbH, Eurolab | 3GPPMEMBER (ETSI) |
| HWANG, Jin-yup | LG Electronics Inc. | 3GPPMEMBER (TTA) |
| HWANG, Youngho | Qorvo | 3GPPMEMBER (ETSI) |
| IIZASA, Naoto | NTT DOCOMO INC. | 3GPPMEMBER (TTC) |
| IKEDA, Tetsu | NEC Corporation | 3GPPMEMBER (ETSI) |
| IMMONEN, Antti | Dish Network | 3GPPMEMBER (ATIS) |
| IOFFE, Anatoliy | Apple Italia S.R.L. | 3GPPMEMBER (ETSI) |
| IYER, Sumant | Qualcomm India Pvt Ltd | 3GPPMEMBER (TSDSI) |
| JAFARIAN, Javad | Bell Mobility | 3GPPMEMBER (ETSI) |
| JAFFAR, Munira | HUGHES Network Systems Ltd | 3GPPMEMBER (ETSI) |
| JHA, Vivek | Altiostar | 3GPPMEMBER (ETSI) |
| JI, Rui | CAICT | 3GPPMEMBER (CCSA) |
| JIA, Qichen | ZTE Corporation | 3GPPMEMBER (CCSA) |
| JIA, Qiong | Huawei Telecommunication India | 3GPPMEMBER (TSDSI) |
| JIA, Yupeng | AT&T GNS Belgium SPRL | 3GPPMEMBER (ETSI) |
| JIANG, Shouning | Datang Mobile Com. Equipment | 3GPPMEMBER (CCSA) |
| JIN, Yiran | Harman GmbH | 3GPPMEMBER (ETSI) |
| KANG, Ting-Wei | MediaTek Beijing Inc. | 3GPPMEMBER (CCSA) |
| KARAJANI, Bledar | ROHDE & SCHWARZ | 3GPPMEMBER (ETSI) |
| KAUR, Samian | Comcast | 3GPPMEMBER (ATIS) |
| KAZMI, Muhammad | Nanjing Ericsson Panda Com Ltd | 3GPPMEMBER (CCSA) |
| KIHARA, Kenichi | SoftBank Corp. | 3GPPMEMBER (ARIB) |
| KIM, Donghyeon | SK Telecom | 3GPPMEMBER (TTA) |
| KIM, Jiwoo | Intel | 3GPPMEMBER (ATIS) |
| KIM, Taekhoon | Samsung Research America | 3GPPMEMBER (ATIS) |
| KIM, Yunsung | LG Uplus | 3GPPMEMBER (TTA) |
| KITAGAWA, Ryu | NTT DOCOMO INC. | 3GPPMEMBER (TTC) |
| KO, Minbeom | Samsung Electronics Co., Ltd | 3GPPMEMBER (TTA) |
| KOBAYASHI, Ryosuke | Fujitsu Limited | 3GPPMEMBER (TTC) |
| KUO, Chun-ming | MediaTek Inc. | 3GPPMEMBER (ETSI) |
| KUUSISTO, Jussi | Dish Network | 3GPPMEMBER (ATIS) |
| KYBETT, Richard | Huawei Tech.(UK) Co., Ltd | 3GPPMEMBER (ETSI) |
| LAHTEENSUO, Toni | Nokia Hungary | 3GPPMEMBER (ETSI) |
| LARSSON, Magnus | Oy LM Ericsson AB | 3GPPMEMBER (ETSI) |
| LAVAN, Ethan | Eutelsat S.A. | 3GPPMEMBER (ETSI) |
| LEATHER, Paul | INFINEON TECHNOLOGIES | 3GPPMEMBER (ETSI) |
| LEE, APA | MediaTek Inc. | 3GPPMEMBER (ETSI) |
| LEE, Hyeonsoo | SK Telecom | 3GPPMEMBER (TTA) |
| LEE, Jae Seung | ETRI | 3GPPMEMBER (TTA) |
| LEE, Jeongheum | Samsung Electronics Romania | 3GPPMEMBER (ETSI) |
| LEE, Junghoon | ETRI | 3GPPMEMBER (TTA) |
| LEE, Sang-wook | LG Electronics Deutschland | 3GPPMEMBER (ETSI) |
| LEE, Young-Taek | Murata Manufacturing Co Ltd. | 3GPPMEMBER (ARIB) |
| LEHTINEN, Vesa | Nokia Corporation | 3GPPMEMBER (ETSI) |
| LEISSE, Volker | CableLabs | 3GPPMEMBER (ETSI) |
| LEO, Richie | ZTE Photonics | 3GPPMEMBER (CCSA) |
| LI, Bozhi | Samsung Electronics France SA | 3GPPMEMBER (ETSI) |
| LI, Chuanjun | GOHIGH DATA NETWORKS TECH. | 3GPPMEMBER (CCSA) |
| LI, HONG | Huawei Technologies (Korea) | 3GPPMEMBER (TTA) |
| LI, hua | Intel China Ltd. | 3GPPMEMBER (CCSA) |
| LI, NING | Meizu Technology | 3GPPMEMBER (CCSA) |
| LI, Qiming | Apple GmbH | 3GPPMEMBER (ETSI) |
| LI, Ruyue Yu-Ngok | ZTE Corporation | 3GPPMEMBER (CCSA) |
| LI, Shuang | CBN | 3GPPMEMBER (CCSA) |
| LI, Tricia | Huawei Technologies Sweden AB | 3GPPMEMBER (ETSI) |
| LI, Yankun | Samsung Electronics GmbH | 3GPPMEMBER (ETSI) |
| LI, Yanwei | KDDI Corporation | 3GPPMEMBER (ARIB) |
| LIM, Suhwan | LG Electronics France | 3GPPMEMBER (ETSI) |
| LIN, hao | OPPO | 3GPPMEMBER (ETSI) |
| LIN, Hsuanli | MediaTek (Wuhan) Inc. | 3GPPMEMBER (CCSA) |
| LIN, hui | Huawei Telecommunication India | 3GPPMEMBER (TSDSI) |
| LIN, Licheng | MediaTek Inc. | 3GPPMEMBER (ETSI) |
| LINDELL, Per | Ericsson Telecomunicazioni SpA | 3GPPMEMBER (ETSI) |
| LIU, Bo | China Telecom Corporation Ltd. | 3GPPMEMBER (CCSA) |
| LIU, Liehai | HUAWEI TECH. GmbH | 3GPPMEMBER (ETSI) |
| LIU, Qifei | Guangdong OPPO Mobile Telecom. | 3GPPMEMBER (CCSA) |
| LIU, Yajian | Huawei Tech.(UK) Co., Ltd | 3GPPMEMBER (ETSI) |
| LIU, Ye | Huawei Technologies France | 3GPPMEMBER (ETSI) |
| LIU, Yifan | Apple GmbH | 3GPPMEMBER (ETSI) |
| LO, Anthony | Nokia UK | 3GPPMEMBER (ETSI) |
| LODIGIANI, Luca | Inmarsat | 3GPPMEMBER (ETSI) |
| MA, Jinwen | Verizon Switzerland AG | 3GPPMEMBER (ETSI) |
| MA, Jun | Qualcomm Incorporated | 3GPPMEMBER (ATIS) |
| MA, Yujuan | CAICT | 3GPPMEMBER (CCSA) |
| MA, Zhifeng | Jetflow | 3GPPMEMBER (CCSA) |
| MAJMUNDAR, Milap | AT&T GNS Belgium SPRL | 3GPPMEMBER (ETSI) |
| MALEKAFZALIARDAKANI, Reihaneh | Ericsson GmbH, Eurolab | 3GPPMEMBER (ETSI) |
| MALJEVIC, Ivo | TELUS | 3GPPMEMBER (ATIS) |
| MARTINEZ, Luis | Ericsson Inc. | 3GPPMEMBER (ATIS) |
| MARTTILA, Jaakko | Nokia Corporation | 3GPPMEMBER (ETSI) |
| MATSUMOTO, Yusuke | Murata Manufacturing Co Ltd. | 3GPPMEMBER (ARIB) |
| MENDIVIL, Edwin | ETS-Lindgren Europe | 3GPPMEMBER (ETSI) |
| MIYAKE, Takao | Keysight Technologies UK Ltd | 3GPPMEMBER (ETSI) |
| MUELLER, Axel | Nokia Shanghai Bell | 3GPPMEMBER (CCSA) |
| MUELLER, William | BROADCOM CORPORATION | 3GPPMEMBER (ETSI) |
| NAHLER, Achim | National Instruments Corp. | 3GPPMEMBER (ETSI) |
| NAKATOGAWA, Tsuyoshi | NHK | 3GPPMEMBER (ARIB) |
| NANGIA, Vijay | Motorola Mobility UK Ltd. | 3GPPMEMBER (ETSI) |
| NATHOO, Rahim | TELUS | 3GPPMEMBER (ATIS) |
| NEBESNY, Paul | Rogers Communications Canada | 3GPPMEMBER (ETSI) |
| NG, Man Hung | Nokia France | 3GPPMEMBER (ETSI) |
| NGUYEN, Serge | Ligado Networks | 3GPPMEMBER (ETSI) |
| NIELSEN, Sari | Nokia Corporation | 3GPPMEMBER (ETSI) |
| NIGAM, Gaurav | Qualcomm Incorporated | 3GPPMEMBER (ATIS) |
| NIU, Huaning | Apple Hungary Kft. | 3GPPMEMBER (ETSI) |
| NOEL, Laurent | Skyworks Solutions Inc. | 3GPPMEMBER (ETSI) |
| NOGAMI, Toshizo | SHARP Corporation | 3GPPMEMBER (ARIB) |
| NORTON, Mark | U.S. Department of Defense | 3GPPMEMBER (ATIS) |
| NOVLAN, Thomas | AT&T | 3GPPMEMBER (ATIS) |
| OGUMA, Yuta | NTT DOCOMO INC. | 3GPPMEMBER (TTC) |
| OHIRA, Hidefumi | Murata Manufacturing Co Ltd. | 3GPPMEMBER (ARIB) |
| OLESEN, Robert | Intelsat | 3GPPMEMBER (ATIS) |
| ONOZAWA, Hisashi | Nokia Japan | 3GPPMEMBER (ARIB) |
| OUCHI, Mikihiro | Panasonic Corporation | 3GPPMEMBER (ARIB) |
| PACKER, Clive | Ligado Networks | 3GPPMEMBER (ETSI) |
| PANAITOPOL, Dorin | THALES | 3GPPMEMBER (ETSI) |
| PARK, CH | Qualcomm Incorporated | 3GPPMEMBER (ATIS) |
| PARK, Jin Woong | LG Electronics UK | 3GPPMEMBER (ETSI) |
| PARK, Jongkeun | LG Electronics Polska | 3GPPMEMBER (ETSI) |
| PARK, Justin | U.S. Department of Defense | 3GPPMEMBER (ATIS) |
| PETROV, Dmitry | Nokia Germany | 3GPPMEMBER (ETSI) |
| PETROVIC, Niels | ROHDE & SCHWARZ | 3GPPMEMBER (ETSI) |
| PETTERSSON, Markus | LG Electronics Finland | 3GPPMEMBER (ETSI) |
| PITTAMPALLI, Eshwar | FirstNet | 3GPPMEMBER (ATIS) |
| POPP, Daniel | Apple Switzerland AG | 3GPPMEMBER (ETSI) |
| PRIALE, Camila | Apple GmbH | 3GPPMEMBER (ETSI) |
| PU, Xiaolin | Ericsson-LG Co., LTD | 3GPPMEMBER (TTA) |
| QIU, Haijie | Samsung Electronics Co., Ltd | 3GPPMEMBER (TTA) |
| RAGHAVAN, Manasa | Apple GmbH | 3GPPMEMBER (ETSI) |
| RAMAMURTHI, Vishwanath | Verizon Sweden | 3GPPMEMBER (ETSI) |
| RASCHKOWSKI, Leszek | Fraunhofer HHI | 3GPPMEMBER (ETSI) |
| RODRIGUEZ-HERRERA, Alfonso | Spirent Communications | 3GPPMEMBER (ETSI) |
| ROSE, Ian | ANRITSU LTD | 3GPPMEMBER (ETSI) |
| RUMNEY, Moray | Keysight Technologies UK Ltd | 3GPPMEMBER (ETSI) |
| RUTKOWSKI, Kimberly | MVG Industries | 3GPPMEMBER (ETSI) |
| SAVAGLIO, Frank | Telstra Corporation Limited | 3GPPMEMBER (ETSI) |
| SAYENKO, Alexander | Apple GmbH | 3GPPMEMBER (ETSI) |
| SCANNAVINI, Alessandro | MVG Industries | 3GPPMEMBER (ETSI) |
| SCHMIEDER, Mathis | Fraunhofer HHI | 3GPPMEMBER (ETSI) |
| SCHOBER, Karol | Nokia Corporation | 3GPPMEMBER (ETSI) |
| SEIBERT, Cristina | NextNav | 3GPPMEMBER (ATIS) |
| SHAH, Manan | Murata Manufacturing Co Ltd. | 3GPPMEMBER (ARIB) |
| SHAN, Huiping | Fiberhome Technologies Group | 3GPPMEMBER (CCSA) |
| SHAN, Yang | China Telecomunication Corp. | 3GPPMEMBER (CCSA) |
| SHAO, Shuai | Beijing OPPO Com. corp., ltd | 3GPPMEMBER (CCSA) |
| SHAO, XIAO | KDDI Corporation | 3GPPMEMBER (TTC) |
| SHAO, Xuanbo | MediaTek Beijing Inc. | 3GPPMEMBER (CCSA) |
| SHAO, Zhe | China Mobile Group Device Co. | 3GPPMEMBER (CCSA) |
| SHARMA, Prashant | Qualcomm Incorporated | 3GPPMEMBER (ATIS) |
| SHEN, Jia | Chongqing Angying | 3GPPMEMBER (CCSA) |
| SHEN, Songhui | Samsung Electronics Nordic AB | 3GPPMEMBER (ETSI) |
| SHEN, Zhongyi | Huawei Technologies France | 3GPPMEMBER (ETSI) |
| SHI, Jiakai | HuaWei Technologies Co., Ltd | 3GPPMEMBER (CCSA) |
| SHI, Zhihua | Hangzhou Douku | 3GPPMEMBER (CCSA) |
| SHIMODAIRA, Hidekazu | NTT DOCOMO INC. | 3GPPMEMBER (ARIB) |
| SHITOMI, Takuya | NHK | 3GPPMEMBER (ARIB) |
| SHRIVASTAVA, Vinay | Reliance Jio | 3GPPMEMBER (TSDSI) |
| SHVODIAN, Bill | T-Mobile USA | 3GPPMEMBER (ETSI) |
| SIAFARIKAS, Dimitrios | Apple GmbH | 3GPPMEMBER (ETSI) |
| SIENKIEWICZ, Esther | Ericsson Inc. | 3GPPMEMBER (ATIS) |
| SIMMONS, Paul | Eutelsat S.A. | 3GPPMEMBER (ETSI) |
| SIOMINA, Iana | Ericsson-LG Co., LTD | 3GPPMEMBER (TTA) |
| SKOLD, Johan | Ericsson France S.A.S | 3GPPMEMBER (ETSI) |
| SONG, Lei | Verizon UK Ltd | 3GPPMEMBER (ETSI) |
| SONG, Yuexia | CATT | 3GPPMEMBER (CCSA) |
| SU, Frank Chih-Wei | III | 3GPPMEMBER (ETSI) |
| SUBRAMANI, Siva | Futurewei | 3GPPMEMBER (ETSI) |
| SUN, Roy | CableLabs | 3GPPMEMBER (ETSI) |
| SUN, Yanliang | vivo Mobile Communication (S) | 3GPPMEMBER (CCSA) |
| SUNDSTRÖM, Fredrik | Ericsson France S.A.S | 3GPPMEMBER (ETSI) |
| SUNELL, Kai-Erik | ETSI | 3GPPORG\_REP (ETSI) |
| SZYDELKO, Michal | Huawei Technologies Sweden AB | 3GPPMEMBER (ETSI) |
| TAKAMIYA, Kotaro | NTT DOCOMO INC. | 3GPPMEMBER (TTC) |
| TANG, Runsen | BEIJING SAMSUNG TELECOM R&D | 3GPPMEMBER (CCSA) |
| TANG, Zhixun | Mediatek India Technology Pvt. | 3GPPMEMBER (TSDSI) |
| TANNO, Takahito | Murata Manufacturing Co Ltd. | 3GPPMEMBER (ARIB) |
| TAO, Xuhua | Xiaomi Technology | 3GPPMEMBER (CCSA) |
| TAYLOR, Carolyn | Samsung R&D Institute UK | 3GPPMEMBER (ETSI) |
| THALANANY, Sebastian | US Cellular Corporation | 3GPPMEMBER (ETSI) |
| TIAN, Jiejiao | Hangzhou Mengyuxiang | 3GPPMEMBER (CCSA) |
| TKATCH, Alex | ROHDE & SCHWARZ | 3GPPMEMBER (ETSI) |
| TOSATO, Filippo | Nokia Italy | 3GPPMEMBER (ETSI) |
| TRIKHA, Pushp | Qualcomm Incorporated | 3GPPMEMBER (ATIS) |
| TROGOLO, Alessandro | TELECOM ITALIA S.p.A. | 3GPPMEMBER (ETSI) |
| TRUELOVE, Stephen | BT plc | 3GPPMEMBER (ETSI) |
| TSEYTLIN, Michael | Facebook | 3GPPMEMBER (ETSI) |
| UESAKA, Kazuyoshi | Ericsson Japan K.K. | 3GPPMEMBER (ARIB) |
| UMEDA, Hiromasa | Nokia Japan | 3GPPMEMBER (ARIB) |
| VAIDYA, Maulik | Charter Communications, Inc | 3GPPMEMBER (ATIS) |
| VALLESE, Pierpaolo | Qualcomm Technologies Int | 3GPPMEMBER (ETSI) |
| VARGAS, David | BBC | 3GPPMEMBER (ETSI) |
| VASENKARI, Petri | Nokia | 3GPPMEMBER (ATIS) |
| VERA, Aida | Intel Finland Oy | 3GPPMEMBER (ETSI) |
| VINTOLA, Ville | Qualcomm Finland RFFE Oy | 3GPPMEMBER (ETSI) |
| WACHTER, Andreas | Polaris Wireless | 3GPPMEMBER (ATIS) |
| WAGNER, Elmar | Apple GmbH | 3GPPMEMBER (ETSI) |
| WANG, He | Samsung Electronics Czech | 3GPPMEMBER (ETSI) |
| WANG, James | Apple (UK) Limited | 3GPPMEMBER (ETSI) |
| WANG, Jin | Huawei Technologies R&D UK | 3GPPMEMBER (ETSI) |
| WANG, Miao | Spreadtrum Communications | 3GPPMEMBER (CCSA) |
| WANG, Ruixin | vivo Communication Technology | 3GPPMEMBER (CCSA) |
| WANG, Shiyuan | China Mobile International Ltd | 3GPPMEMBER (CCSA) |
| WANG, ZHOU | Huawei Device Co., Ltd | 3GPPMEMBER (CCSA) |
| WARDER, Philip | Qorvo | 3GPPMEMBER (ETSI) |
| WEI, xusheng | vivo Mobile Communication Co., | 3GPPMEMBER (CCSA) |
| WITHERELL, Michael | T-Mobile USA Inc. | 3GPPMEMBER (ATIS) |
| WOLF, Bernd | BMWi | 3GPPMEMBER (ETSI) |
| WU, Jingzhou | China Telecom Corporation Ltd. | 3GPPMEMBER (CCSA) |
| WU, Yue | Samsung R&D Institute India | 3GPPMEMBER (TSDSI) |
| WU, Yumin | Beijing Xiaomi Mobile Software | 3GPPMEMBER (CCSA) |
| XIA, Zhiping | ABS | 3GPPMEMBER (CCSA) |
| XIE, Yuming | Sanechips | 3GPPMEMBER (CCSA) |
| XING, Jinqiang | OnePlus | 3GPPMEMBER (CCSA) |
| XIZENG, Dai | HuaWei Technologies Co., Ltd | 3GPPMEMBER (CCSA) |
| XU, Jin | BUPT | 3GPPMEMBER (CCSA) |
| XU, Jing | Dongguan OPPO Precision Elec. | 3GPPMEMBER (CCSA) |
| XU, Tao | Intel Finland Oy | 3GPPMEMBER (ETSI) |
| XU, Weijie | Shenzhen YZF Network Technolog | 3GPPMEMBER (CCSA) |
| XUE, Fei | ZTE Corporation | 3GPPMEMBER (CCSA) |
| XUE, Ruifeng | Cisco Systems | 3GPPMEMBER (ATIS) |
| YAGHMOUR, Salim | Intelsat | 3GPPMEMBER (ATIS) |
| YAMASHITA, Osamu | Anritsu Corporation | 3GPPMEMBER (ARIB) |
| YAN, Liang | Samsung R&D Institute UK | 3GPPMEMBER (ETSI) |
| YAN, Nathan | Apple Computer Trading Co. Ltd | 3GPPMEMBER (CCSA) |
| YANG, ChihKai | MediaTek (Chengdu) Inc. | 3GPPMEMBER (CCSA) |
| YANG, Qian | ZTE Corporation | 3GPPMEMBER (ETSI) |
| YANG, Tang | Apple AB | 3GPPMEMBER (ETSI) |
| YANG, xiaohang | CAICT | 3GPPMEMBER (CCSA) |
| YANG, YOONOH | LG Electronics Inc. | 3GPPMEMBER (TTA) |
| YANG, Yunchuan | Samsung Guangzhou Mobile R&D | 3GPPMEMBER (CCSA) |
| YOKOKAWA, Tomoki | NTT DOCOMO INC. | 3GPPMEMBER (TTC) |
| YOON, Min-Geun | SK Telecom | 3GPPMEMBER (TTA) |
| YU, Fei | BUPT | 3GPPMEMBER (CCSA) |
| YU, Tsang-wei | MediaTek (Hefei) Inc. | 3GPPMEMBER (CCSA) |
| YUAN, Ye | GUANGDONG GENIUS TECHNOLOGY CO | 3GPPMEMBER (CCSA) |
| ZANDER, Olof | Sony Corporation | 3GPPMEMBER (ARIB) |
| ZENG, Yong | Murata Manufacturing Co Ltd. | 3GPPMEMBER (ARIB) |
| ZHANG, Chunhui | Nanjing Ericsson Panda Com Ltd | 3GPPMEMBER (CCSA) |
| ZHANG, Dawei | Apple France | 3GPPMEMBER (ETSI) |
| ZHANG, Jinyu | Guangdong OPPO Mobile Telecom. | 3GPPMEMBER (CCSA) |
| ZHANG, Juan | Samsung Electronics Benelux BV | 3GPPMEMBER (ETSI) |
| ZHANG, Li | Huawei Technologies Japan K.K. | 3GPPMEMBER (TTC) |
| ZHANG, Meng | HUAWEI TECHNOLOGIES Co. Ltd. | 3GPPMEMBER (ETSI) |
| ZHANG, Peng | HUAWEI Technologies Japan K.K. | 3GPPMEMBER (ARIB) |
| ZHANG, Qian | HiSilicon Technologies Co. Ltd | 3GPPMEMBER (CCSA) |
| ZHANG, Shichang | Hangzhou Mengyuxiang | 3GPPMEMBER (CCSA) |
| ZHANG, Xiaoran | China Mobile Com. Corporation | 3GPPMEMBER (CCSA) |
| ZHANG, Yiyan | Samsung Electronics Iberia SA | 3GPPMEMBER (ETSI) |
| ZHANG, Yufeng | CAICT | 3GPPMEMBER (CCSA) |
| ZHAO, Dong | Samsung Electronics Polska | 3GPPMEMBER (ETSI) |
| ZHAO, Kun | Sony Mobile Communications | 3GPPMEMBER (ARIB) |
| ZHAO, Yichen | China Mobile Group Device Co. | 3GPPMEMBER (CCSA) |
| ZHAO, Zheng | Verizon Denmark | 3GPPMEMBER (ETSI) |
| ZHOU, Hai | Huawei Tech.(UK) Co., Ltd | 3GPPMEMBER (ETSI) |
| ZHOU, Rui | Beijing Xiaomi Electronics | 3GPPMEMBER (CCSA) |
| ZHOU, Shuai | vivo Mobile Com. (Chongqing) | 3GPPMEMBER (CCSA) |
| ZHOU, Wei | GUANGDONG GENIUS TECHNOLOGY CO | 3GPPMEMBER (CCSA) |
| ZHOU, Wubin | ShenZhen Zhongxing Shitong | 3GPPMEMBER (CCSA) |
| ZHOU, Xutao | BEIJING SAMSUNG TELECOM R&D | 3GPPMEMBER (CCSA) |
| ZHU, Siting | CAICT | 3GPPMEMBER (CCSA) |
| ZIQI, Liu | vivo Communication Technology | 3GPPMEMBER (CCSA) |