**3GPP TSG-RAN WG4 Meeting #104 R4-22xxxxx**

**Toulouse, France, 22 – 26 August 2022**

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

**DRAFT Meeting Report  
for  
TSG RAN WG4  
meeting: 103-e**

**Electronic Meeting, Online, 09/05/2022 to 20/05/2022**

Report generated on Tuesday, 2022-04-26 06:37 UTC

Contents:

1 Opening of the E-meeting 11

2 Approval of the agenda 11

3 Letters / reports from other groups / meeting 11

4 Up to Rel-16 maintenance for LTE and NR 15

4.1 NR WIs 15

4.1.1 UE RF requirements 15

4.1.1.1 FR1 (38.101-1) 15

4.1.1.2 FR2 (38.101-2) 27

4.1.1.3 Requirements for 38.101-3 31

4.1.2 BS RF requirements 36

4.1.2.1 General 36

4.1.2.2 TX/RX requirements (38.104) 37

4.1.2.3 MSR and eAAS specifications 38

4.1.3 BS conformance testing 42

4.1.3.1 General 42

4.1.3.2 Conducted conformance testing (38.141-1) 43

4.1.3.3 Radiated conformance testing (38.141-2) 43

4.1.3.4 OAT BS testing 46

4.1.4 UE/BS EMC requirements 47

4.1.5 RRM requirements 55

4.1.5.1 RRM core requirements (38.133/36.133) 55

4.1.5.2 RRM performance requirements (38.133/36.133) 63

4.1.6 Demodulation and CSI requirements (38.101-4/38.104) 76

4.1.6.1 UE demodulation requirements 76

4.1.6.2 CSI requirements 78

4.1.6.3 BS demodulation requirements 79

4.1.7 NR MIMO OTA test methods (38.827) 79

5 Rel-17 maintenance for LTE and NR 80

5.1 Rel-17 spectrum related WIs 80

5.1.1 Introduction of lower 6GHz NR unlicensed operation for Europe 80

5.1.1.1 UE RF requirements 80

5.1.1.2 BS RF requirements 80

5.1.2 Introduction of operation in full unlicensed band 5925-7125MHz for NR 80

5.1.2.1 UE RF requirements 80

5.1.2.2 BS RF requirements 80

5.1.3 Introduction of 1900 MHz spectrum to 5G NR applicable for Rail Mobile Radio 80

5.1.4 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) 81

5.1.5 DC of 5 bands LTE inter-band CA (5DL/1L) and 1 NR band (1DL/1UL) 81

5.1.6 Downlink interruption for band combinations to conduct dynamic Tx Switching 81

5.1.7 Addition of MSD (Maximum Sensitivity Degradation) for inter-band EN-DC combinations due to added channel bandwidths 81

5.1.8 High power UE (power class 2) for NR FDD band 81

5.1.8.1 UE RF requirements 81

5.1.9 4Rx support for NR band n8 82

5.1.10 Upper 700MHz A Block new E-UTRA band in US 82

5.2 Rel-17 non-spectrum related WIs 82

5.2.1 UE RF requirements for Transparent Tx Diversity (TxD) for NR 82

5.2.1.1 General 82

5.2.1.2 UE RF requirements 82

5.2.1.3 Release independency 84

5.2.2 Support for Multi-SIM devices for LTE/NR 84

5.2.2.1 RRM core requirements 84

5.3 Other WIs and Rel-17 TEI 84

5.3.1 BS RF requirements 84

5.3.2 UE RF requirements 85

5.3.3 RRM requirements 90

5.3.4 Demodulation and CSI requirements 92

5.3.5 Rel-17 TEI 92

5.3.5.1 Incorrect PMI reporting 92

5.3.5.2 Canada band n77 93

6 LS response to ITU 93

6.1 Generic unwanted emission (IMT-2020) 93

6.2 Test methods for OTA total radiated power 94

7 Rel-17 feature list 94

8 Rel-17 spectrum related WIs for NR 95

8.1 Introduction of 6GHz NR licensed bands 95

8.1.1 General 95

8.1.2 System parameters 95

8.1.3 UE RF requirements 96

8.1.4 BS RF requirements 98

8.1.5 Others 101

8.2 Introduction of 900 MHz spectrum to 5G NR applicable for Rail Mobile Radio 101

8.2.1 UE RF requirements 101

8.2.2 BS RF requirements 102

8.2.3 RRM requirements 103

8.3 Issues arising from basket WIs but not subject to block approval 104

8.3.1 UE RF requirements 104

8.3.2 NR-U intra-band contiguous UL CA 106

8.4 NR intra band Carrier Aggregation for xCC DL/yCC UL including contiguous and non-contiguous spectrum (x>=y) 106

8.4.1 Rapporteur Input (WID/TR/CR) 106

8.4.2 UE RF requirements for FR1 107

8.4.3 UE RF requirements for FR2 108

8.5 NR inter-band Carrier Aggregation/Dual Connectivity for 2 bands DL with x bands UL (x=1, 2) 108

8.5.1 Rapporteur Input (WID/TR/CR) 108

8.5.2 NR inter band CA requirements without any FR2 band(s) 109

8.5.3 NR inter band CA requirements with at least one FR2 band 113

8.6 NR Inter-band Carrier Aggregation for 3 bands DL with 1 band UL 116

8.6.1 Rapporteur Input (WID/TR/CR) 116

8.6.2 UE RF requirements 117

8.7 NR Inter-band Carrier Aggregation for 4 bands DL with 1 band UL 120

8.7.1 Rapporteur Input (WID/TR/CR) 120

8.7.2 UE RF requirements 121

8.8 NR Inter-band Carrier Aggregation/Dual connectivity for 3 bands DL with 2 bands UL 124

8.8.1 Rapporteur Input (WID/TR/CR) 124

8.8.2 UE RF requirements 125

8.9 NR inter-band Carrier Aggregation and Dual connectivity for DL 4 bands and 2UL bands 132

8.9.1 Rapporteur Input (WID/TR/CR) 132

8.9.2 UE RF requirements 133

8.10 NR inter-band CA for 5 bands DL with x bands UL (x=1, 2) 136

8.10.1 Rapporteur Input (WID/TR/CR) 136

8.10.2 UE RF requirements 137

8.11 DC of 1 LTE band and 1 NR band 137

8.11.1 Rapporteur Input (WID/TR/CR) 137

8.11.2 EN-DC requirements without FR2 band 138

8.11.3 EN-DC requirements with FR2 band 138

8.12 DC of 2 LTE band and 1 NR band 140

8.12.1 Rapporteur Input (WID/TR/CR) 140

8.12.2 EN-DC requirements without FR2 band 140

8.12.3 EN-DC requirements with FR2 band 143

8.13 DC of 3 LTE band and 1 NR band 144

8.13.1 Rapporteur Input (WID/TR/CR) 144

8.13.2 EN-DC requirements without FR2 band 144

8.13.3 EN-DC requirements with FR2 band 145

8.14 DC of 4 LTE band and 1 NR band 145

8.14.1 Rapporteur Input (WID/TR/CR) 145

8.14.2 EN-DC requirements without FR2 band 146

8.14.3 EN-DC requirements with FR2 band 146

8.15 DC of x bands (x=1,2, 3, 4) LTE inter-band CA and 2 bands NR inter-band CA 147

8.15.1 Rapporteur Input (WID/TR/CR) 147

8.15.2 EN-DC requirements including NR inter CA without FR2 band 148

8.15.3 EN-DC requirements including NR inter CA with FR2 band 151

8.16 DC of x bands (x=1,2) LTE inter-band CA (xDL/xUL) and y bands (y=3-x) NR inter-band CA 153

8.16.1 Rapporteur Input (WID/TR/CR) 153

8.16.2 UE RF requirements 154

8.17 DC of x bands (x=1,2,3) LTE inter-band CA (xDL/1UL) and 3 bands NR inter-band CA (3DL/1UL) 154

8.17.1 Rapporteur Input (WID/TR/CR) 154

8.17.2 UE RF requirements 155

8.18 DC of x bands (x=1,2,3) LTE inter-band CA (xDL/1UL) and 4 bands NR inter-band CA (4DL/1UL) 155

8.18.1 Rapporteur Input (WID/TR/CR) 155

8.18.2 UE RF requirements 156

8.19 Band combinations for SA NR supplementary uplink (SUL) NSA NR SUL, NSA NR SUL with UL sharing from the UE perspective (ULSUP) 156

8.19.1 Rapporteur Input (WID/TR/CR) 156

8.19.2 UE RF requirements 157

8.20 Band combinations for Uu and V2X con-current operation 159

8.20.1 Rapporteur Input (WID/TR/CR) 159

8.20.2 UE RF requirements 160

8.21 Adding channel bandwidth support to existing NR bands 160

8.21.1 Rapporteur Input (WID/TR/CR) 160

8.21.2 UE RF requirements 161

8.21.2.1 Addition of bandwidth and Tx/Rx requirements 161

8.21.2.2 NR-U 100MHz bandwidth 163

8.21.3 BS RF requirements 164

8.22 Introduction of bandwidth combination set 4 (BCS4) for NR 164

8.22.1 Rapporteur Input (WID/TR/CR) 164

8.22.2 UE RF requirements for BCS4/BCS5 164

8.23 High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, Band 13, Band n5, Band n13, and Band n71 166

8.23.1 General 166

8.23.2 Coexistence study 166

8.23.3 UE RF requirements 166

8.24 High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink 166

8.24.1 Rapporteur Input (WID/TR/CR) 166

8.24.2 UE RF requirements 167

8.25 High power UE (power class 2) for EN-DC with 1 LTE band + 1 NR TDD band 169

8.25.1 Rapporteur Input (WID/TR/CR) 169

8.25.2 UE RF requirements 170

8.26 Power Class 2 UE for NR inter-band CA and SUL configurations with x (x>2) bands DL and y (y=1, 2) bands UL 170

8.26.1 Rapporteur Input (WID/TR/CR) 170

8.26.2 UE RF requirements 170

8.27 Power Class 2 for EN-DC with xLTE band + yNR DL with 1LTE+1(TDD) NR UL band (x= 2, 3, 4, y=1; x=1, 2, y=2) 171

8.27.1 Rapporteur Input (WID/TR/CR) 171

8.27.2 UE RF requirements 171

8.28 High power UE for NR TDD intra-band carrier aggregation in frequency range FR1 172

8.28.1 Rapporteur Input (WID/TR/CR) 172

8.28.2 UE RF requirements 172

8.29 Increasing UE power high limit for CA and DC 172

8.29.1 General 172

8.29.2 Feasibility and impact study 173

8.29.3 UE RF requirements 173

8.30 Additional NR bands for UL-MIMO 175

8.30.1 Rapporteur Input (WID/TR/CR) 175

8.30.2 UE RF requirements 176

8.31 Simultaneous Rx/Tx band combinations for CA, SUL, MR-DC and NR-DC 176

8.31.1 Rapporteur Input (WID/TR/CR) 176

8.31.2 Identify simultaneous Rx/Tx capabilities for band combinations 177

8.31.3 FR2 band combinations with simultaneous Rx/Tx 177

8.31.4 Define rules for simultaneous Rx/Tx capabilities 177

9 Rel-17 non-spectrum related work items for NR 178

9.1 Multiple Input Multiple Output (MIMO) Over-the-Air (OTA) requirements for NR UEs 178

9.1.1 General 178

9.1.2 Performance requirements 179

9.1.2.1 Lab alignment for FR1 179

9.1.2.2 Performance Requirements for FR1 180

9.1.2.3 Performance Requirements for FR2 181

9.1.2.4 MU assessment for FR1 and FR2 181

9.1.3 Testing methodologies 181

9.1.3.1 Testing parameters for Performance 181

9.1.3.2 Optimization of test methodologies 182

9.1.3.3 Channel model validation 182

9.2 Introduction of UE TRP (Total Radiated Power) and TRS (Total Radiated Sensitivity) requirements and test methodologies for FR1 (NR SA and EN-DC) 182

9.2.1 General and work plan 182

9.2.2 Test methodology maintenance 183

9.2.2.1 SA test methodology 184

9.2.2.2 EN-DC test methodology 184

9.2.2.3 UE with multiple antennas test methodology 185

9.2.2.4 Test time reduction 185

9.2.3 Performance requirements 185

9.2.3.1 Framework for lab alignment and requirements 185

9.2.3.2 SA requirements 187

9.2.3.3 EN-DC requirements 187

9.3 RF requirements enhancement for NR frequency range 1 (FR1) 187

9.3.1 RF core requirement maintenance 187

9.3.2 RRM core requirement maintenance 188

9.3.3 RRM performance requirements 188

9.4 NR RF requirement enhancements for frequency range 2 (FR2) 188

9.4.1 General 188

9.4.2 UE RF requirements for inter-band CA 188

9.4.2.1 Inter-band DL CA requirements 189

9.4.2.1.1 UE relaxation values for DL CA with IBM for CA\_n258-n261 189

9.4.2.2 Inter-band UL CA requirements 191

9.4.2.2.1 UL CA MPR, relaxation values and Pcmax handling for CA\_n257A-n259A and CA\_n260-n261 191

9.4.3 UL gaps for self-calibration and monitoring 192

9.4.3.1 UE Tx power management 192

9.4.3.2 Coherent UL-MIMO 193

9.4.4 DC location for intra-band UL CA for both FR2 and FR1 194

9.4.5 CA BW classes 195

9.4.5.1 New FR2 CA BW Classes to enable CA operation for mix of 100 and 200 MHz CCs 195

9.4.6 RRM core requirements 197

9.4.6.1 General 197

9.4.6.2 Inter-band UL CA for IBM 197

9.4.6.3 UL gaps for self-calibration and monitoring 198

9.4.7 RRM performance requirements 199

9.4.7.1 Inter-band UL CA for IBM 199

9.4.7.2 UL gaps for self-calibration and monitoring 200

9.5 NR repeater 200

9.5.1 General requirement maintenance 200

9.5.2 Conductive RF core requirement maintenance 202

9.5.3 Radiated RF core requirement maintenance 203

9.5.4 EMC core requirement maintenance and performance requirement 204

9.5.5 RF Conformance testing 205

9.5.5.1 General 205

9.5.5.1.1 Stimulus signal /Test models 205

9.5.5.1.2 Test configurations 205

9.5.5.1.3 Others 206

9.5.5.2 Conductive conformance Testing 206

9.5.5.2.1 Transmitted power related requirements 207

9.5.5.2.2 Emission requirements 207

9.5.5.2.3 Others 208

9.5.5.3 Radiated conformance Testing 208

9.5.5.3.1 Transmitted power related requirements 209

9.5.5.3.2 Emission requirements 209

9.5.5.3.3 Others 209

9.6 Introduction of DL 1024QAM for NR FR1 210

9.6.1 UE RF requirements maintenance 210

9.6.2 BS TX RF requirements maintenance 210

9.6.3 BS RF conformance testing 210

9.6.4 Demodulation and CSI requirements 211

9.6.4.1 PDSCH requirements 211

9.6.4.2 SDR requirements 213

9.6.4.3 CQI requirements 213

9.7 Enhancement for NR high speed train scenario in FR1 214

9.7.1 RRM core requirement maintenance 214

9.7.2 RRM performance requirements 215

9.7.3 UE demodulation requirements (38.101-4) 217

9.8 NR support for high speed train scenario in FR2 219

9.8.1 UE RF core requirement maintenance 219

9.8.1.1 UE Tx requirements 219

9.8.1.2 UE Rx requirements 219

9.8.2 RRM core requirement maintenance 219

9.8.2.1 General 219

9.8.2.2 RRC Idle/Inactive and connected state mobility requirements 220

9.8.2.3 Timing requirements 221

9.8.2.4 Signalling characteristics requirements 222

9.8.2.5 Measurement procedure requirements 223

9.8.3 RRM performance requirements 223

9.8.4 Demodulation requirements 225

9.8.4.1 UE demodulation requirements 225

9.8.4.1.1 PDSCH requirements under Uni-directional scenario 226

9.8.4.1.2 PDSCH requirements under Bi-directional scenario 226

9.8.4.2 BS demodulation requirements 226

9.8.4.2.1 PUSCH requirements 227

9.8.4.2.2 PUSCH with UL timing adjustment requirements 228

9.8.4.2.3 PRACH requirements 228

9.9 Further RRM enhancement for NR and MR-DC 229

9.9.1 RRM core requirement maintenance 229

9.9.1.1 SRS antenna port switching 229

9.9.1.2 HO with PSCell 230

9.9.1.3 PUCCH SCell activation/deactivation 233

9.9.2 RRM performance requirements 235

9.9.2.1 SRS antenna port switching 235

9.9.2.2 HO with PSCell 237

9.9.2.3 PUCCH SCell activation/deactivation 239

9.10 NR and MR-DC measurement gap enhancements 241

9.10.1 RRM core requirement maintenance 241

9.10.1.1 Pre-configured MG pattern(s) 241

9.10.1.2 Multiple concurrent and independent MG patterns 243

9.10.1.3 Network Controlled Small Gap 246

9.10.2 RRM performance requirements 247

9.10.2.1 Pre-configured MG pattern(s) 247

9.10.2.2 Multiple concurrent and independent MG patterns 248

9.10.2.3 Network Controlled Small Gap 249

9.11 Further enhancement on NR demodulation performance 250

9.11.1 General 250

9.11.2 UE demodulation and CSI requirements 251

9.11.2.1 MMSE-IRC receiver for inter-cell interference 251

9.11.2.1.1 PDSCH requirements 251

9.11.2.1.2 CQI requirements 253

9.11.2.2 MMSE-IRC receiver for intra-cell inter-user interference 255

9.11.2.3 CRS-IM receiver in scenarios with overlapping spectrum for LTE and NR 257

9.11.2.3.1 General 257

9.11.2.3.2 Test set-up 260

9.11.3 BS demodulation requirements maintenance 262

9.11.3.1 PUSCH demodulation requirements for FR1 256QAM 262

9.12 Solutions for NR to support non-terrestrial networks (NTN) 262

9.12.1 General 262

9.12.2 Coexistence aspects 264

9.12.3 Satellite Access Node RF requirements 265

9.12.3.1 TX requirements for radiated characteristics 265

9.12.3.2 RX requirements for radiated characteristics 266

9.12.3.3 Tx requirements for conducted characteristics 267

9.12.3.4 Rx requirements for conducted characteristics 271

9.12.4 Satellite Access Node RF conformance testing 272

9.12.4.1 General and work plan 272

9.12.4.2 Conductive conformance Testing 273

9.12.4.3 Radiated conformance Testing 274

9.12.5 UE RF requirements 274

9.12.5.1 TX requirements 274

9.12.5.2 RX requirements 276

9.12.6 RRM core requirements 278

9.12.6.1 General 278

9.12.6.2 GNSS-related requirements 280

9.12.6.3 Mobility requirements 280

9.12.6.4 Timing requirements 281

9.12.6.5 Measurement procedure requirements 282

9.12.7 RRM performance requirements 284

9.12.8 Demodulation requirements 285

9.12.8.1 General 285

9.12.8.2 Satellite Access Node demodulation requirements 285

9.12.8.2.1 PUSCH requirements 285

9.12.8.2.2 PUCCH requirements 286

9.12.8.2.3 PRACH requirements 286

9.12.8.3 UE demodulation requirements 287

9.12.8.3.1 PDSCH requirements 287

9.13 UE Power Saving Enhancements for NR 288

9.13.1 RRM core requirement maintenance 288

9.13.2 RRM performance requirements 291

9.13.3 Demodulation performance requirements 293

9.14 NR Sidelink enhancement 293

9.14.1 UE RF requirement maintenance for NR SL enhancement 293

9.14.2 Maintenance for Intra-band con-current operation between NR SUL and NR Uu 296

9.14.3 Maintenance for High power UE(PC2) for SL 297

9.14.4 RRM core requirement maintenance 297

9.14.5 RRM performance requirements 298

9.14.6 Demodulation performance requirements 300

9.15 Extending current NR operation to 71GHz 300

9.15.1 General 300

9.15.2 Operation bands and system parameters (channelization, raster, CBW, etc) 301

9.15.3 UE RF requirements 304

9.15.3.1 TX requirements 304

9.15.3.2 RX requirements 306

9.15.4 BS RF requirements 307

9.15.4.1 TX requirements 307

9.15.4.2 RX requirements 308

9.15.5 BS RF conformance testing 309

9.15.5.1 General 309

9.15.5.2 Transmitter characteristics 309

9.15.5.3 Receiver characteristics 310

9.15.6 Co-existence simulations 311

9.15.7 FR1+FR2-2 DC/CA band combinations 311

9.15.8 RRM core requirements 311

9.15.8.1 General 311

9.15.8.2 Timing requirements 312

9.15.8.3 Interruption requirements 314

9.15.8.4 Active BWP switching delay requirements 314

9.15.8.5 Measurement gap interruption requirements 314

9.15.8.6 LBT impacts on RRM requirements 314

9.15.9 RRM performance requirements 315

9.15.10 Demodulation and CSI requirements 316

9.15.10.1 General 316

9.15.10.2 UE Demodulation and CSI requirements 316

9.15.10.2.1 PDSCH requirements 317

9.15.10.2.2 PDCCH/PBCH requirements 318

9.15.10.2.3 SDR requirements 319

9.15.10.2.4 CSI reporting requirements 319

9.15.10.3 BS demodulation requirements 320

9.15.10.3.1 PUSCH requirements 320

9.15.10.3.2 PUCCH requirements 321

9.15.10.3.3 PRACH requirements 321

9.16 Enhancements to Integrated Access and Backhaul (IAB) for NR 322

9.16.1 General 322

9.16.2 RF requirements maintenance 322

9.16.3 RF conformance testing 324

9.16.4 RRM core requirements maintenance 325

9.16.5 RRM performance requirements 325

9.16.6 Demodulation requirements 325

9.17 NR coverage enhancements 326

9.17.1 UE RF requirement maintenance 326

9.17.1.1 Phase continuity core requirement maintenance 327

9.17.1.2 Issues for measurement and test setup 328

9.17.2 BS demodulation requirements 329

9.17.2.1 PUSCH requirements 329

9.17.2.2 PUCCH requirements 331

9.18 Further enhancements on MIMO for NR 332

9.18.1 UE RF requirement maintenance 332

9.18.1.1 Impact of MPE enhancements 332

9.18.1.2 SRS related impact 332

9.18.2 RRM core requirement maintenance 333

9.18.2.1 Unified TCI for DL and UL 333

9.18.2.2 Inter-cell beam management 335

9.18.2.3 Others 337

9.18.3 RRM performance requirements 338

9.18.4 UE Demodulation and CSI requirements 339

9.18.4.1 General 339

9.18.4.2 Demodulation requirements 339

9.18.4.2.1 Enhancement on HST-SFN scenario 340

9.18.4.2.2 Enhancement on Multi-TRP 340

9.18.4.3 CSI requirements 341

9.18.4.3.1 CSI reporting for Multi-TRP transmission 341

9.18.4.3.2 Rel-17 eType II port selection codebook 342

9.19 Support of reduced capability NR devices 342

9.19.1 General 342

9.19.2 UE RF requirements 343

9.19.2.1 FR1 343

9.19.2.1.1 Tx requirements (power class) 343

9.19.2.1.2 Rx requirements (REFSENS, etc) 343

9.19.2.2 FR2 344

9.19.2.2.1 Tx requirements (power class, UE type) 344

9.19.2.2.2 Rx requirements 344

9.19.2.3 Others 344

9.19.3 RRM core requirements 344

9.19.3.1 Impacts from UE complexity reduction 344

9.19.3.1.1 General 344

9.19.3.1.2 Mobility requirements 346

9.19.3.1.3 Timing requirements 348

9.19.3.1.4 Signalling characteristics 350

9.19.3.1.5 Measurement procedure 352

9.19.3.2 Extended DRX enhancements 354

9.19.3.3 RRM measurement relaxations 355

9.19.3.4 Others 357

9.19.4 RRM performance requirements 358

9.19.5 UE demodulation and CSI requirements 359

9.19.5.1 General 359

9.19.5.2 Demodulation requirements 360

9.19.5.2.1 PDSCH/SDR requirements 360

9.19.5.2.2 PDCCH/PBCH requirements 361

9.19.5.3 CSI requirements 362

9.19.5.3.1 CQI requirements 362

9.19.5.3.2 PMI/RI requirements 363

9.20 Positioning enhancements for NR 364

9.20.1 RRM core requirement maintenance 364

9.20.1.1 UE Rx/Tx and/or gNB Rx/Tx timing delay mitigation 364

9.20.1.2 Latency reduction of positioning measurement 365

9.20.1.3 Measurement in RRC\_INACTIVE state 366

9.20.1.4 Impact on existing UE positioning and RRM requirements 368

9.20.1.5 Enhancements of A-GNSS positioning 368

9.20.1.6 Others 368

9.20.2 RRM performance requirements 369

9.20.2.1 UE Rx/Tx and/or gNB Rx/Tx timing delay mitigation 369

9.20.2.2 Latency reduction of positioning measurement 370

9.20.2.3 Measurement in RRC\_INACTIVE state 372

9.20.2.4 Impact on existing UE positioning and RRM requirements 373

9.20.2.5 Enhancements of A-GNSS positioning 373

9.20.2.6 Others 374

9.21 Multi-Radio Dual-Connectivity enhancements 375

9.21.1 RRM core requirement maintenance 375

9.21.1.1 Efficient activation/de-activation mechanism for SCells 375

9.21.1.2 Efficient activation/de-activation mechanism for one SCG 376

9.21.1.3 Conditional PSCell change and addition 379

9.21.1.4 Others 379

9.21.2 RRM performance requirements 380

9.22 Enhanced IIoT and URLLC support 380

9.22.1 RRM core requirement maintenance 380

9.22.1.1 Propagation delay compensation enhancements 380

9.22.1.2 Reference point for Te requirements 381

9.22.1.3 Others 382

9.22.2 RRM performance requirements 382

9.22.3 Demodulation performance and CSI requirements 383

9.23 NR Sidelink Relay 383

9.23.1 RRM core requirement maintenance 383

9.23.2 RRM performance requirements 383

9.24 NR small data transmissions in INACTIVE state 384

9.24.1 RRM core requirement maintenance 384

9.24.2 RRM performance requirements 386

10 Rel-17 Work Items for LTE 387

10.1 LTE inter-band Carrier Aggregation for 2 bands DL with 1 band UL 387

10.1.1 Rapporteur Input (WID/TR/CR) 387

10.1.2 UE RF with harmonic, close proximity and isolation issues 387

10.1.3 UE RF without specific issues 387

10.2 LTE inter-band Carrier Aggregation for 3 bands DL with 1 band UL 388

10.2.1 Rapporteur Input (WID/TR/CR) 388

10.2.2 UE RF with harmonic, close proximity and isolation issues 389

10.2.3 UE RF without specific issues 389

10.3 LTE inter-band Carrier Aggregation for x bands DL (x=4, 5) with 1 band UL 390

10.3.1 Rapporteur Input (WID/TR/CR) 390

10.3.2 UE RF with 4 LTE bands CA 390

10.3.3 UE RF with 5 LTE bands CA 390

10.4 LTE inter-band Carrier Aggregation for 2 bands DL with 2 band UL 391

10.4.1 Rapporteur Input (WID/TR/CR) 391

10.4.2 UE RF with harmonic, close proximity and isolation issues 391

10.4.3 UE RF without specific issues 391

10.5 LTE inter-band Carrier Aggregation for x bands DL (x= 3, 4, 5) with 2 band UL 392

10.5.1 Rapporteur Input (WID/TR/CR) 392

10.5.2 UE RF with MSD 393

10.5.3 UE RF without MSD 393

10.6 RRM for LTE CA basket WIs 394

10.6.1 RRM Core (36.133) 394

10.6.2 RRM Perf (36.133) 394

10.7 New WID on Additional LTE bands for UE category M1&M2 and/or NB1&NB2 in Rel-17 394

10.7.1 Rapporteur Input (WID/TR/CR) 394

10.7.2 RF requirements 394

10.7.3 Others 398

10.8 Additional enhancements for NB-IoT and LTE-MTC 398

10.8.1 UE RF requirement maintenance 399

10.8.2 BS RF requirement maintenance 399

10.8.3 BS conformance testing 399

10.8.4 RRM core requirements maintenance 399

10.8.5 RRM performance requirements 399

10.8.6 Demodulation requirements 400

10.8.6.1 General 400

10.8.6.2 Demodulation requirements for NB-IoT 400

10.8.6.2.1 UE demodulation requirements 400

10.8.6.2.2 BS demodulation requirements 400

10.8.6.3 Demodulation requirements for MTC 401

11 Rel-18 Study Items for NR 401

11.1 Study on enhanced test methods for FR2 in NR 401

11.1.1 Maintenance on objectives 1~6 402

11.1.2 OTA test methods for UE RF, RRM and demodulation for 52.6~71GHz 402

11.1.2.1 General 402

11.1.2.1.1 Test system assumption 402

11.1.2.1.2 UE types 402

11.1.2.1.3 MU assessment 402

11.1.2.1.4 Others 403

11.1.2.2 Test methodology for UE RF 403

11.1.2.3 Test methodology for RRM 403

11.1.2.4 Test methodology for UE demodulation and CSI 403

11.2 Study on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths 403

11.2.1 General and TR 403

11.2.2 Evaluation of use of larger channel bandwidths than licensed bandwidth 404

11.2.2.1 Channel filter assumptions and RB blanking with impacts on UE (ACS, blocking) 404

11.2.2.2 Signaling and configuration (RAN1/RAN2 impacts) aspects 404

11.2.2.3 Other aspects such as detailed solution, complexity, legacy UE, etc 404

11.2.3 Evaluation of use of overlapping UE channel bandwidths 405

11.2.3.1 Overlapping CBWs from network perspective 405

11.2.3.1.1 Signaling and configuration (RAN1/RAN2 impacts) aspects 405

11.2.3.1.2 Other aspects such as detailed solution, complexity, legacy UE, etc 405

11.2.3.2 Combined UE CBWs (one cell) 405

11.2.3.2.1 Signaling and configuration (RAN1/RAN2 impacts) aspects 405

11.2.3.2.2 Other aspects such as detailed solution, complexity, legacy UE, etc 406

11.2.3.3 Overlapping CA (two cells) 406

11.2.3.3.1 Signaling and configuration (RAN1/RAN2 impacts) aspects 406

11.2.3.3.2 Other aspects such as detailed solution, complexity, legacy UE, etc 406

11.2.3.4 Overall method comparisons 406

12 Rel-18 Work Items for LTE 407

12.1 Introduction of LTE TDD band in 1670-1675 MHz 407

12.1.1 General 407

12.1.2 UE RF requirements 407

12.1.3 BS RF requirements 408

13 Liaison and output to other groups 408

13.1 R17 related 408

13.1.1 Coordination of R17 gap features (R2-2203879) 408

13.1.2 Others 409

13.2 R15, R16 related 409

13.2.1 BWP operation without bandwidth restriction (R2-2204009) 409

13.2.2 FR2 power control for NR-DC 410

13.2.3 FR2 requirement applicability over ETC 410

13.2.4 FR2 UE relative power control tolerance requirements 410

13.2.5 Lower humidity limit in normal temperature test environment (R5-221604) 410

13.2.6 Additional RF requirements for NS\_03U, NS\_05U and NS\_43U (R5-221613) 412

13.2.7 SCell dropping in FR2 RF UL-CA tests (R5-221617) 413

13.2.8 Others 414

14 Revision of the Work Plan 414

14.1 Discussions on R18 basket work items 414

14.2 Others 418

15 Any other business 418

16 Close of the E-meeting 419

## 1 Opening of the E-meeting

The Chairman Xizeng Dai (Huawei) opened the meeting on RAN4 reflector on 09/05/2022.

Intellectual Property Rights Declaration 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 in two parallel sessions; Main session, and BS RF Test Demod session and one RRM session. The Main session was chaired by RAN4 Chair Xizeng Dai (Huawei), RRM session was chaired by RAN4 Vice Chair Haijie Qiu (Samsung) + RAN4 Chair Xizeng Dai (Huawei) and BS RF Test Demod session was chaired by RAN4 ViceChair 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

**R4-2207600 RAN4#102-e Meeting Report**

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

**Decision: Approved.**

**R4-2207601 Agenda for RAN4#103-e**

*Type: agenda For: Approval  
 Source: RAN4 Chair (Huawei)*

**Decision: Approved.**

**R4-2207602 RAN4#103-e E-Meeting Arrangements and Guidelines**

*Type: other For: Approval  
 Source: RAN4 Chair (Huawei)*

**Decision: Approved.**

## 3 Letters / reports from other groups / meeting

R4-2207603 LS on updated Rel-17 LTE and NR higher-layers parameter list RAN1 (R1-2202760)

R4-2207604 LS on updated Rel-16 RAN1 UE features lists for NR after RAN1#108-e RAN1 (R1-2202764)

R4-2207605 LS on the dropping rule of DL signals/channels for capability 1B and 2 RAN1 (R1-2202842)

R4-2207606 LS on use of CQI table for NB-IoT DL 16QAM RAN1 (R1-2202880)

R4-2207607 LS on operation with and without SSB for RedCap UE RAN1 (R1-2202886

R4-2207608 LS on UE capability for 16QAM for NB-IoT RAN1 (R1-2202893)

R4-2207609 LS on updated Rel-17 RAN1 UE features list for LTE RAN1 (R1-2202924)

R4-2207610 LS on updated Rel-17 RAN1 UE features list for NR RAN1 (R1-2202927)

R4-2207611 LS on upper layers parameters for Rel-17 eIAB RAN1 (R1-2202947)

R4-2207612 Reply LS to RAN4 on RRM relaxation RAN2 (R2-2203555) Response to: R4-2202675

R4-2207613 Reply LS on Signalling of PC2 V2X intra-band concurrent operation RAN2 (R2-2203686) Response to: R4-2119992

R4-2207614 LS on TCI state indication RAN2 (R2-2203803)

R4-2207615 Reply LS on interruption for PUCCH SCell activation in invalid TA case RAN2 (R2-2203835) Response to: R4-2120420

R4-2207616 LS on coordination of R17 gap features RAN2 (R2-2203879)

R4-2207617 LS on BWP operation without bandwidth restriction RAN2 (R2-2204009)

R4-2207618 LS on measurement gaps enhancements for NTN RAN2 (R2-2204114)

R4-2207619 LS on introduction of an offset to transmit CD-SSB and NCD-SSB at different times RAN2 (R2-2204115)

R4-2207620 Reply LS to RAN4 on RLM/BFD relaxation for ePowSav RAN2 (R2-2204238) Response to: R4-2206790

R4-2207621 LS on TA validation for CG-SDT RAN2 (R2-2204269)

R4-2207622 Questions concerning the implementation of RAN1 agreements in NRPPa RAN3 (R3-222721)

R4-2207623 LS on lower humidity limit in normal temperature test environment RAN5 (R5-221604)

R4-2207624 LS on Additional RF requirements for NS\_03U, NS\_05U and NS\_43U RAN5 (R5-221613)

R4-2207625 LS on SCell Dropping in FR2 RF UL-CA tests RAN5 (R5-221617)

R4-2207626 LS to ISED-Canada to clarify the RSS-195 requirement related to wireless communication service equipment operating in 2305-2320 MHz / 2345-2360 MHz frequency range RAN (RP-221014)

R4-2207627 LS on presentation of EUWENA and involvement in 3GPP on Non Public Network EUWENA (Presentation\_EUWENA\_March2022)

R4-2207628 FREQUENCY ARRANGEMENTS FOR IMT IN THE BAND 470 – 703 MHZ APT Wireless Group (AWG-29/OUT-02) Response to: RP-212629

R4-2207713 Reply to Liaison statement of 3GPP TSG RAN on the inclusion of the 6425-7125 MHz frequency band in the 3GPP specification for 5G-NR / IMT-2020 systems RCC Commission on Spectrum and Satellite Orbits (20220419171637) Response to: R4-2206375

**R4-2207603 LS on updated Rel-17 LTE and NR higher-layers parameter list (RAN1)**

*Type: LS in For: Information  
 Original outgoing LS: R1-2202760, to RAN2, RAN3, cc RAN4***Decision: Noted.**

**R4-2207604 LS on updated Rel-16 RAN1 UE features lists for NR after RAN1#108-e (RAN1)**

*Type: LS in For: Information  
 Original outgoing LS: R1-2202764, to RAN2, cc RAN4  
 Source: RAN1*

**Decision: Noted.**

**R4-2207605 LS on the dropping rule of DL signals/channels for capability 1B and 2 (RAN1)**

*Type: LS in For: Information  
 Original outgoing LS: R1-2202842, to RAN4, cc -***Decision: Noted.**

**R4-2207606 LS on use of CQI table for NB-IoT DL 16QAM (RAN1)**

*Type: LS in For: Information  
 Original outgoing LS: R1-2202880, to RAN2, cc RAN4***Decision: Noted.**

**R4-2207607 LS on operation with and without SSB for RedCap UE (RAN1)**

*Type: LS in For: Information  
 Original outgoing LS: R1-2202886, to RAN2, RAN4, cc -***Decision: Noted.**

**R4-2207608 LS on UE capability for 16QAM for NB-IoT (RAN1)**

*Type: LS in For: Information  
 Original outgoing LS: R1-2202893, to RAN4, cc RAN2***Decision: Noted.**

**R4-2207609 LS on updated Rel-17 RAN1 UE features list for LTE (RAN1)**

*Type: LS in For: Information  
 Original outgoing LS: R1-2202924, to RAN2, RAN4, cc -***Decision: Noted.**

**R4-2207610 LS on updated Rel-17 RAN1 UE features list for NR (RAN1)**

*Type: LS in For: Information  
 Original outgoing LS: R1-2202927, to RAN2, RAN4, cc -***Decision: Noted.**

**R4-2207611 LS on upper layers parameters for Rel-17 eIAB (RAN1)**

*Type: LS in For: Information  
 Original outgoing LS: R1-2202947, to RAN2, RAN3, cc RAN4***Decision: Noted.**

**R4-2207612 Reply LS to RAN4 on RRM relaxation (RAN2)**

*Type: LS in For: Information  
 Original outgoing LS: R2-2203555, to RAN4, cc -***Decision: Noted.**

**R4-2207613 Reply LS on Signalling of PC2 V2X intra-band concurrent operation (RAN2)**

*Type: LS in For: Information  
 Original outgoing LS: R2-2203686, to RAN4, cc RAN1***Decision: Noted.**

**R4-2207614 LS on TCI state indication (RAN2)**

*Type: LS in For: Information  
 Original outgoing LS: R2-2203803, to RAN4, cc RAN1***Decision: Noted.**

**R4-2207615 Reply LS on interruption for PUCCH SCell activation in invalid TA case (RAN2)**

*Type: LS in For: Information  
 Original outgoing LS: R2-2203835, to RAN4, cc RAN1***Decision: Noted.**

**R4-2207616 LS on coordination of R17 gap features (RAN2)**

*Type: LS in For: Information  
 Original outgoing LS: R2-2203879, to RAN4, cc RAN1***Decision: Noted.**

**R4-2207617 LS on BWP operation without bandwidth restriction (RAN2)**

*Type: LS in For: Information  
 Original outgoing LS: R2-2204009, to RAN1, RAN4, cc -***Decision: Noted.**

**R4-2207618 LS on measurement gaps enhancements for NTN (RAN2)**

*Type: LS in For: Information  
 Original outgoing LS: R2-2204114, to RAN4, cc -***Decision: Noted.**

**R4-2207619 LS on introduction of an offset to transmit CD-SSB and NCD-SSB at different times (RAN2)**

*Type: LS in For: Information  
 Original outgoing LS: R2-2204115, to RAN1, RAN4, cc -***Decision: Noted.**

**R4-2207620 Reply LS to RAN4 on RLM/BFD relaxation for ePowSav (RAN2)**

*Type: LS in For: Information  
 Original outgoing LS: R2-2204238, to RAN4, cc -***Decision: Noted.**

**R4-2207621 LS on TA validation for CG-SDT (RAN2)**

*Type: LS in For: Information  
 Original outgoing LS: R2-2204269, to RAN4, cc -***Decision: Noted.**

**R4-2207622 Questions concerning the implementation of RAN1 agreements in NRPPa (RAN3)**

*Type: LS in For: Information  
 Original outgoing LS: R3-222721, to RAN1, RAN2, cc RAN4***Decision: Noted.**

**R4-2207623 LS on lower humidity limit in normal temperature test environment (RAN5)**

*Type: LS in For: Information  
 Original outgoing LS: R5-221604, to RAN4, cc -***Decision: Noted.**

**R4-2207624 LS on Additional RF requirements for NS\_03U, NS\_05U and NS\_43U (RAN5)**

*Type: LS in For: Information  
 Original outgoing LS: R5-221613, to RAN4, cc -***Decision: Noted.**

**R4-2207625 LS on SCell Dropping in FR2 RF UL-CA tests (RAN5)**

*Type: LS in For: Information  
 Original outgoing LS: R5-221617, to RAN4, cc -***Decision: Noted.**

**R4-2207626 LS to ISED-Canada to clarify the RSS-195 requirement related to wireless communication service equipment operating in 2305-2320 MHz / 2345-2360 MHz frequency range (RAN)**

*Type: LS in For: Information  
 Original outgoing LS: RP-221014, to ISED-Canada, cc RAN4***Decision: Noted.**

**R4-2207627 LS on presentation of EUWENA and involvement in 3GPP on Non Public Network (EUWENA)**

*Type: LS in For: Information  
 Original outgoing LS: Presentation\_EUWENA\_March2022, to SA, RAN, CT, cc SA1, SA2, SA6, RAN1, RAN2, RAN3, RAN4, CT1, CT6***Decision: Noted.**

**R4-2207628 FREQUENCY ARRANGEMENTS FOR IMT IN THE BAND 470 – 703 MHZ (APT Wireless Group)**

*Type: LS in For: Information  
 Original outgoing LS: AWG-29/OUT-02, to RAN, RAN4, cc -***Decision: Noted.**

**R4-2207713 Reply to Liaison statement of 3GPP TSG RAN on the inclusion of the 6425-7125 MHz frequency band in the 3GPP specification for 5G-NR / IMT-2020 systems (RCC Commission on Spectrum and Satellite Orbits)**

*Type: LS in For: Information  
 Original outgoing LS: 20220419171637, to RAN, cc RAN4  
 Source: RCC Commission on Spectrum and Satellite Orbits*

**Decision: Noted.**

## 4 Up to Rel-16 maintenance for LTE and NR

### 4.1 NR WIs

**R4-2208198 Draft CR on TS 36.171 requirements for support of A-GNSS**

*Type: draftCR For: Endorsement  
 36.171 v16.4.0 CR- rev Cat: F (Rel-16)  
  
 Source: CATT, CAICT, CENC*

**Decision: Revised to R4-2211165 (from R4-2208198).**

**R4-2211165 Draft CR on TS 36.171 requirements for support of A-GNSS**

*Type: draftCR For: Endorsement  
 36.171 v16.4.0 CR- rev Cat: F (Rel-16)  
  
 Source: CATT, CAICT, CENC*

**Decision: Endorsed.**

**R4-2208199 Draft CR on TS 36.171 requirements for support of A-GNSS**

*Type: draftCR For: Endorsement  
 36.171 v17.0.0 CR- rev Cat: A (Rel-17)  
  
 Source: CATT, CAICT, CENC*

**Decision: Endorsed.**

**R4-2208200 Draft CR on TS 38.171 requirements for support of A-GNSS**

*Type: draftCR For: Endorsement  
 38.171 v16.3.0 CR- rev Cat: F (Rel-16)  
  
 Source: CATT, CAICT, CENC*

**Decision: Revised to R4-2211166 (from R4-2208200).**

**R4-2211166 Draft CR on TS 38.171 requirements for support of A-GNSS**

*Type: draftCR For: Endorsement  
 38.171 v16.3.0 CR- rev Cat: F (Rel-16)  
  
 Source: CATT, CAICT, CENC*

**Decision: Endorsed.**

**R4-2208201 Draft CR on TS 38.171 requirements for support of A-GNSS**

*Type: draftCR For: Endorsement  
 38.171 v17.0.0 CR- rev Cat: A (Rel-17)  
  
 Source: CATT, CAICT, CENC*

**Decision: Endorsed.**

#### 4.1.1 UE RF requirements

**[103-e][101] R15\_R16\_Maintenance, AI 4.1.1 – Jinqiang Xing**

**R4-2210238 Email discussion summary for [103-e][101] R15\_R16\_Maintenance**

*Type: other For: Information  
 Source: Moderator (Oppo)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210438 (from R4-2210238).**

**R4-2210438 Email discussion summary for [103-e][101] R15\_R16\_Maintenance**

*Type: other For: Information  
 Source: Moderator (Oppo)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210540 | WF on 30MHz reconfiguration failure when accessing 40MHz network of n28 | CMCC | Cover sub-topic 1-1 |
| R4-2210541 | WF on FR1 UL coherent MIMO test | Anritsu | Cover sub-topic 1-2 |
| R4-2210542 | WF on EIRP-based test metric for FR2 SEM | Apple | Cover sub-topic 2-1 |
| R4-2210543 | WF on intrabandENDC-Support | Xiaomi | Cover sub-topic 3-1 |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2209160 |  | Draft CR to modify MPR and AMPR definitions for almost contiguous allocations | Anritsu | Withdrawn | Wrong file uploaded |
| R4-2209161 |  | Draft CR to modify MPR and AMPR definitions for almost contiguous allocations | Anritsu | Withdrawn | Wrong file uploaded |
| R4-2209162 |  | Draft CR to modify MPR and AMPR definitions for almost contiguous allocations | Anritsu | Withdrawn | Wrong file uploaded |
| R4-2208001 | R4-2210685 | n65 AMPR and Coexistence revisited | Qualcomm | Return to |  |
| R4-2208401 |  | Discussion on 30MHz reconfiguration failure when accessing 40MHz network of n28 | CMCC | Noted |  |
| R4-2209149 |  | FR1 UL coherent MIMO | Anritsu | Noted |  |
| R4-2207674 |  | EIRP-based test metric for FR2 SEM verifications | Apple | Noted |  |
| R4-2208782 |  | Discussion on intra-band EN-DC combination | Google | Noted |  |
| R4-2208855 |  | Discussion on intrabandENDC-Support | Xiaomi | Noted |  |
| R4-2208579  R4-2208580 (CAT-A)  R4-2208581 (CAT-A) |  | Update of UL MIMO transmit quality definitions | Rohde & Schwarz | Return to |  |
| R4-2208664 |  | draft CR to TS38.101-1[R15] Some Corrections for Transmitter characteristics | ZTE | Endorsed |  |
| R4-2208693 |  | Draft CR to 38.101-1: Correction on MSD value for DC\_1A-8A\_n78A | ZTE | Endorsed |  |
| R4-2208738  R4-2208739 (CAT-A)  R4-2208740 (CAT-A) |  | Correction to Pcmax: application of p-NR-FR1 for one CG with one uplink serving cell | Ericsson | Return to |  |
| R4-2209022  R4-2209023 (CAT-A)  R4-2209024 (CAT-A) |  | Draft CR for TS 38.101-1 Section 6.2.2 | ZTE | Not pursued. |  |
| R4-2209150  R4-2209151 (CAT-A)  R4-2209152 (CAT-A) | R4-2210682 | Draft CR to add ‘Annex G Difference of relative phase and power errors’ for FR1 UL coherent MIMO | Anritsu | Revised |  |
| R4-2209310  R4-2209311 (CAT-A)  R4-2209312 (CAT-A) | R4-2210683 | draftCR for TS 38.101-1 Rel-15: Corrections on Single Bands Coex | Apple | Revised |  |
| R4-2209334  R4-2209335 (CAT-A)  R4-2209336 (CAT-A) |  | Draft CR for 38.101-1 to add note 5 for band n83(R15) | Huawei | R4-2209334 Endorsed  R4-2209335 Return to.  R4-2209336 Return to. |  |
| R4-2209782  R4-2209783 (CAT-A)  R4-2209784 (CAT-A) |  | A draft CR to clarify the 100 kHz channel raster applicability | Nokia | Not pursued |  |
| R4-2210346 |  | Draft CR to modify MPR and AMPR definitions for almost contiguous allocations | Anritsu | Not pursued |  |
| R4-2207866 |  | draft CR: Update of UE capability name for Tx switching | China Telecom | Endorsed |  |
| R4-2207886  R4-2207887 (CAT-A) |  | CR for 38.101-1-gb0: Correction for n7 A-MPR (NS\_46) | Keysight | Endorsed |  |
| R4-2207996  R4-2207997 (CAT-A) | R4-2210684 | CR for 38.101-1 Rel16 Correction for n65 15, 20MHz Coexistence | Qualcomm | Revised |  |
| R4-2207998  R4-2207999 (CAT-A) |  | CR for 38.101-1 Rel16 Minor AMPR Corrections for n65 to account for SCS | Qualcomm | Endorsed |  |
| R4-2208596  R4-2208597 (CAT-A) |  | Miscelleous corrections on A-MPR requirements for Intra-band CA | vivo | Endorsed |  |
| R4-2208665 |  | draft CR to TS38.101-1[R16] Some Corrections for Transmitter and Receiver characteristics | ZTE | Endorsed |  |
| R4-2208686  R4-2208687 (CAT-A) |  | Draft CR to 38.101-1: Correction on terms for NR DC Pcmax | ZTE | Not pursued |  |
| R4-2208694  R4-2208695 (CAT-A) |  | Draft CR to 38.101-1: Correction on MSD value for DC\_1A-8A\_n78A and DC\_1A\_n8A-n78A | ZTE | Endorsed |  |
| R4-2208741  R4-2208742 (CAT-A) | R4-2210686 | Correct the NS value applicability for operation in the n77 frequency range in the US | Ericsson | Revised |  |
| R4-2209092  R4-2209093 (CAT-A) | R4-2210687 | Draft CR to 38.101-1 R16 adding the missing additional spurious emission requirement for CA\_NC\_NS\_04 | Xiaomi | Revised |  |
| R4-2209337  R4-2209338 (CAT-A) | R4-2210688 | Draft CR for 38.101-1 to clarify the restriction of band n28 for CA\_n20-n28(R16) | Huawei | Revised |  |
| R4-2209342  R4-2209343 (CAT-A) |  | Draft CR for 38.101-1 to add the missing simultaneous Rx/Tx capability for SUL band combinations (R16) | Huawei | Return to. |  |
| R4-2209344  R4-2209345 (CAT-A) | R4-2210689 | Draft CR for 38.101-1 to maintenance NR V2X UE spec (R16) | Huawei | Revised |  |
| R4-2209350  R4-2209351 (CAT-A) |  | Draft CR for 38.101-1 to add exception clause for inter-band CA REFSENS (R16) | Huawei | Endorsed |  |
| R4-2209380  R4-2209381 (CAT-A) |  | Draft CR on clarification of Tx DC location in FR1 CA (R16) | OPPO | Return to. |  |
| R4-2209752  R4-2209753 (CAT-A) | R4-2211162 | draft CR for TS 38.101-1: correction for DC location reporting (R16 cat-F) | Huawei | Revised | 18May changed status from “return to” to “revised” |
| R4-2210201  R4-2210202 (CAT-A)  R4-2210203 (CAT-A) |  | Correction to out-of-band blocking ranges | Qualcomm | Endorsed |  |
| R4-2210347  R4-2210348 (CAT-A) |  | Draft CR to modify MPR and AMPR definitions for almost contiguous allocations | Anritsu | Not pursued |  |
| R4-2207827 |  | Draft CR for 38.101-1: Incorrect reference of R2 IE in UL Tx Switching (R17) | SoftBank | Not pursued | merged to R4-2207865 |
| R4-2209025  R4-2209026 (CAT-A)  R4-2209027 (CAT-A) |  | Draft CR for TS 38.101-2 Section 6.2.2 | ZTE | Not pursued. |  |
| R4-2207671  R4-2207672 (CAT-A)  R4-2207673 (CAT-A) |  | Draft CR for TS 38.101-2: Change FR2 ACLR verification test metric | Apple | Not pursued. |  |
| R4-2207675  R4-2207676 (CAT-A)  R4-2207677 (CAT-A) |  | Draft CR for TS 38.101-2: Change FR2 SEM verification test metric | Apple | Postponed |  |
| R4-2207883 |  | CR for 38.101-2-fh0: Correction for PC3 MPRnarrow | Keysight | Endorsed |  |
| R4-2207884  R4-2207885 (CAT-A) |  | CR for 38.101-2-gb0: Correction for PC3 MPRnarrow | Keysight | Endorsed |  |
| R4-2209626 |  | Draft CR to TS 38.101-2 on UE multi-band relaxation factors for PC3 | ZTE | Return to. |  |
| R4-2208611  R4-2208612 (CAT-A) |  | draft CR to remove the LO exception of SEM in FR2 | vivo | Not pursued. |  |
| R4-2208871  R4-2208872 (CAT-A) |  | Draft CR for clarification on Maximum input and ACS and IBB for FR2 DL intra and inter combinations for TS 38.101-2 | NTT DOCOMO | Postponed. |  |
| R4-2209383  R4-2209402 (CAT-A) |  | Draft CR on clarification of Tx DC location in FR2 CA (R16) | OPPO | Postponed |  |
| R4-2207786 (CAT-A) |  | Correction of FR2 UE configured transmitted power | Apple | Endorsed |  |
| R4-2207824  R4-2207825 (CAT-A)  R4-2207826 (CAT-A) |  | Draft CR for 38.101-3: Missing definitions of PEMAX\_NE-DC in Pcmax formulae (R15) | SoftBank | Endorsed |  |
| R4-2208868  R4-2208869 (CAT-A)  R4-2208870 (CAT-A) |  | Draft CR for correction on missing band configuration in MSD table for IM | NTT DOCOMO | Endorsed |  |
| R4-2209339  R4-2209340 (CAT-A)  R4-2209341 (CAT-A) |  | Draft CR for 38.101-3 to clarify the restriction of band n28 for DC\_20\_n28(R15) | Huawei | Endorsed |  |
| R4-2210109 |  | CR to TS 38.101-3 V16.11.0 on intra-band ULCA UL configurations | Skyworks | Endorsed |  |
| R4-2208783  R4-2208784 (CAT-A) |  | Draft CR for 38.101-3 Rel-16 intra-band contiguous EN-DC band combination | Google | Postponed |  |
| R4-2208785  R4-2208786 (CAT-A) |  | Draft CR for 38.101-3 Rel-16 intra-band non-contiguous EN-DC band combination | Google | Postponed |  |
| R4-2208856  R4-2208857 (CAT-A) |  | Draft CR for 38.101-3 Rel-16 to correct band combination for intra-band ENDC | Xiaomi | Postponed |  |
| R4-2209352  R4-2209353 (CAT-A) |  | Draft CR for 38.101-3 to add DC\_3C-7A-8A\_n1A due to missing implementation (R16) | Huawei | Endorsed |  |
| R4-2209925 |  | Correction of DC\_3C\_n7A-n78(2A) | Nokia | Endorsed |  |
| R4-2209627  R4-2209628 (CAT-A) |  | Draft CR to TS 38.307 on NR intra-band CA bandwidth class within FR1 (Rel-16) | ZTE | Return to |  |
| R4-2209629  R4-2209630 (CAT-A) |  | Draft CR to TS 38.307 on requirements for NR UE power class for FR1 (Rel-16) | ZTE | Endorsed |  |
| R4-2209313  R4-2209314 (CAT-A)  R4-2209315 (CAT-A) | R4-2210690 | draftCR for TS 36.101 Rel-15: Corrections on Single Bands Coex | Apple | Revised |  |
| R4-2209324  R4-2209325 (CAT-A)  R4-2209326 (CAT-A) |  | Draft CR for TS 36.101: P-Max definition correction for bands other than Band 41 | Apple | Postponed |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210540 |  | WF on 30MHz reconfiguration failure when accessing 40MHz network of n28 | CMCC | Approved |  |
| R4-2210541 |  | WF on FR1 UL coherent MIMO test | Anritsu | Approved |  |
| R4-2210542 |  | WF on EIRP-based test metric for FR2 SEM | Apple | Approved |  |
| R4-2210543 |  | WF on intrabandENDC-Support | Xiaomi | Noted |  |
| R4-2208579  R4-2208580 (CAT-A)  R4-2208581 (CAT-A) |  | Update of UL MIMO transmit quality definitions | Rohde & Schwarz | Postponed |  |
| R4-2208738  R4-2208739 (CAT-A)  R4-2208740 (CAT-A) |  | Correction to Pcmax: application of p-NR-FR1 for one CG with one uplink serving cell | Ericsson | Not pursued |  |
| R4-2210682 (revision of R4-2209150)  R4-2209151 (CAT-A)  R4-2209152 (CAT-A) |  | Draft CR to add ‘Annex G Difference of relative phase and power errors’ for FR1 UL coherent MIMO | Anritsu | Endorsed |  |
| R4-2210683  R4-2209311 (CAT-A)  R4-2209312 (CAT-A) |  | draftCR for TS 38.101-1 Rel-15: Corrections on Single Bands Coex | Apple | Endorsed |  |
| R4-2209334  R4-2209335 (CAT-A)  R4-2209336 (CAT-A) |  | Draft CR for 38.101-1 to add note 5 for band n83(R15) | Huawei | Endorsed |  |
| R4-2210684  R4-2207997 (CAT-A) |  | CR for 38.101-1 Rel16 Correction for n65 15, 20MHz Coexistence | Qualcomm | Postponed | company ask for further check in next meeting. |
| R4-2210685 |  | n65 AMPR and Coexistence revisited | Qualcomm | Noted |  |
| R4-2210686  R4-2208742 (CAT-A) |  | Correct the NS value applicability for operation in the n77 frequency range in the US | Ericsson | Postponed | Two different versions of revision were submitted and got different supports and concerns. |
| R4-2210687  R4-2209093 (CAT-A) |  | Draft CR to 38.101-1 R16 adding the missing additional spurious emission requirement for CA\_NC\_NS\_04 | Xiaomi | Endorsed |  |
| R4-2210688  R4-2209338 (CAT-A) |  | Draft CR for 38.101-1 to clarify the restriction of band n28 for CA\_n20-n28(R16) | Huawei | Endorsed |  |
| R4-2209342  R4-2209343 (CAT-A) |  | Draft CR for 38.101-1 to add the missing simultaneous Rx/Tx capability for SUL band combinations (R16) | Huawei | Endorsed |  |
| R4-2209380  R4-2209381 (CAT-A) |  | Draft CR on clarification of Tx DC location in FR1 CA (R16) | OPPO | Merged | Merged to R4-2211162 |
| R4-2211162  R4-2209753 (CAT-A) |  | draft CR for TS 38.101-1: correction for DC location reporting (R16 cat-F) | Huawei | Endorsed | 18May changed status from “return to” to “revised” |
| R4-2209025  R4-2209026 (CAT-A)  R4-2209027 (CAT-A) |  | Draft CR for TS 38.101-2 Section 6.2.2 | ZTE | Postponed | Not pursued (1st rd) -> Postponed (2nd)  Technically companies are ok with “All symbols/terms defined in section 3.2 will not be repeated in the body texts of the specs” |
| R4-2209626 |  | Draft CR to TS 38.101-2 on UE multi-band relaxation factors for PC3 | ZTE | Endorsed |  |
| R4-2209627  R4-2209628 (CAT-A) |  | Draft CR to TS 38.307 on NR intra-band CA bandwidth class within FR1 (Rel-16) | ZTE | Endorsed |  |
| R4-2210690  R4-2209314 (CAT-A)  R4-2209315 (CAT-A) |  | draftCR for TS 36.101 Rel-15: Corrections on Single Bands Coex | Apple | Endorsed |  |

**R4-2210540 WF on 30MHz reconfiguration failure when accessing 40MHz network of n28**

*Type: Other For: Approval  
 Source: CMCC*

**Decision: Approved.**

**R4-2210541 WF on FR1 UL coherent MIMO test**

*Type: CR For: Agreement  
 Source: Anritsu*

**Decision: Approved.**

**R4-2210542 WF on EIRP-based test metric for FR2 SEM**

*Type: other For: Approval  
 Source: Apple*

**Decision: Approved.**

**R4-2210543 WF on intrabandENDC-Support**

*Type: other For: Approval  
 Source: Xiaomi*

**Decision: Noted.**

##### 4.1.1.1 FR1 (38.101-1)

**R4-2207827 Draft CR for 38.101-1: Incorrect reference of R2 IE in UL Tx Switching (R17)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: SoftBank Corp.*

**Abstract:**

While R16 spec looks OK, in R17 spec, a UE capability name (uplinkTxSwitching-PowerBoosting) defined in R16 WI is wrongly implemented (necessary hyphen missed).

**Decision: Not pursued.**

**R4-2207866 draft CR: Update of UE capability name for Tx switching**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: China Telecom*

**Decision: Endorsed.**

**R4-2207886 CR for 38.101-1-gb0: Correction for n7 A-MPR (NS\_46)**

*Type: CR For: Agreement  
 38.101-1 v16.11.0 CR-1052 rev Cat: A (Rel-16)  
  
 Source: Keysight Technologies UK Ltd, Qualcomm Inc.*

**Decision: Endorsed.**

**R4-2207887 CR for 38.101-1-h50: Correction for n7 A-MPR (NS\_46)**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1053 rev Cat: A (Rel-17)  
  
 Source: Keysight Technologies UK Ltd, Qualcomm Inc.*

**Decision: Endorsed.**

**R4-2207996 CR for 38.101-1 Rel16 Correction for n65 15, 20MHz Coexistence**

*Type: CR For: Approval  
 38.101-1 v16.11.0 CR-1054 rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2210684 (from R4-2207996).**

**R4-2210684 CR for 38.101-1 Rel16 Correction for n65 15, 20MHz Coexistence**

*Type: CR For: Approval  
 38.101-1 v16.11.0 CR-1054 rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Postponed.**

**R4-2207997 CR for 38.101-1 Rel17 Correction for n65 15, 20MHz Coexistence**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1055 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Withdrawn.**

**R4-2207998 CR for 38.101-1 Rel16 Minor AMPR Corrections for n65 to account for SCS**

*Type: CR For: Approval  
 38.101-1 v16.11.0 CR-1056 rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2207999 CR for 38.101-1 Rel17 Minor AMPR Corrections for n65 to account for SCS**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1057 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2208001 n65 AMPR and Coexistence revisited**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Abstract:**

Addressing 15, 20MHz BW coexistence concern as well as minor AMPR corrections to account for all SCS

**Decision: Revised to R4-2210685 (from R4-2208001).**

**R4-2210685 n65 AMPR and Coexistence revisited**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Abstract:**

Addressing 15, 20MHz BW coexistence concern as well as minor AMPR corrections to account for all SCS

**Decision: Noted.**

**R4-2208401 Discussion on 30MHz reconfiguration failure when accessing 40MHz network of n28**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2208579 Update of UL MIMO transmit quality definitions**

*Type: draftCR For: Agreement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Decision: Postponed.**

**R4-2208580 Update of UL MIMO transmit quality definitions**

*Type: draftCR For: Agreement  
 38.101-1 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Decision: Withdrawn.**

**R4-2208581 Update of UL MIMO transmit quality definitions**

*Type: draftCR For: Agreement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Rohde & Schwarz*

**Decision: Withdrawn.**

**R4-2208596 Miscelleous corrections on A-MPR requirements for Intra-band CA**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2208597 Miscelleous corrections on A-MPR requirements for Intra-band CA**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2208664 draft CR to TS38.101-1[R15] Some Corrections for Transmitter characteristics**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2208665 draft CR to TS38.101-1[R16] Some Corrections for Transmitter and Receiver characteristics**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2208686 Draft CR to 38.101-1: Correction on terms for NR DC Pcmax**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Decision: Not pursued.**

**R4-2208687 Draft CR to 38.101-1: Correction on terms for NR DC Pcmax**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2208693 Draft CR to 38.101-1: Correction on MSD value for DC\_1A-8A\_n78A**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: ZTE Corporation, CHTTL*

**Decision: Endorsed.**

**R4-2208694 Draft CR to 38.101-1: Correction on MSD value for DC\_1A-8A\_n78A and DC\_1A\_n8A-n78A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: ZTE Corporation, CHTTL*

**Decision: Endorsed.**

**R4-2208695 Draft CR to 38.101-1: Correction on MSD value for DC\_1A-8A\_n78A and DC\_1A\_n8A-n78A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: ZTE Corporation, CHTTL*

**Decision: Endorsed.**

**R4-2208738 Correction to Pcmax: application of p-NR-FR1 for one CG with one uplink serving cell**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to correct the configured maximum output power: the UE-specific P-max limits of the cell-group power p-NR-FR1 and p-UE-FR1 should also be applied to the PCMAX,f,c for a serving cell c and carrier frequency f to cover the case of one CG (MCG) cont

**Decision: Not pursued.**

**R4-2208739 Correction to Pcmax: application of p-NR-FR1 for one CG with one uplink serving cell**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to correct the configured maximum output power: the UE-specific P-max limits of the cell-group power p-NR-FR1 and p-UE-FR1 should also be applied to the PCMAX,f,c for a serving cell c and carrier frequency f to cover the case of one CG (MCG) cont

**Decision: Withdrawn.**

**R4-2208740 Correction to Pcmax: application of p-NR-FR1 for one CG with one uplink serving cell**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to correct the configured maximum output power: the UE-specific P-max limits of the cell-group power p-NR-FR1 and p-UE-FR1 should also be applied to the PCMAX,f,c for a serving cell c and carrier frequency f to cover the case of one CG (MCG) cont

**Decision: Withdrawn.**

**R4-2208741 Correct the NS value applicability for operation in the n77 frequency range in the US**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

CR to correct the applicable frequency ranges for NS\_55

**Decision: Revised to R4-2210686 (from R4-2208741).**

**R4-2210686 Correct the NS value applicability for operation in the n77 frequency range in the US**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

CR to correct the applicable frequency ranges for NS\_55

**Decision: Postponed.**

**R4-2208742 Correct the NS value applicability for operation in the n77 frequency range in the US**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR to correct the applicable frequency ranges for NS\_55

**Decision: Withdrawn.**

**R4-2208743 Definition of PC1.5 and applicability of extensions of power-class parameters (RRC)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

CR to define PC1.5 and clarify applcability of extended power-class parameters (RRC)

**Decision: Agreed.**

**R4-2208744 Definition of PC1.5 and applicability of extensions of power-class parameters (RRC)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR to define PC1.5 and clarify applcability of extended power-class parameters (RRC)

**Decision: Postponed.**

**R4-2209022 Draft CR for TS 38.101-1 Section 6.2.2**

*Type: draftCR For: (not specified)  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: ZTE Wistron Telecom AB*

**Decision: Not pursued.**

**R4-2209023 Draft CR for TS 38.101-1 Section 6.2.2**

*Type: draftCR For: (not specified)  
 38.101-1 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Decision: Withdrawn.**

**R4-2209024 Draft CR for TS 38.101-1 Section 6.2.2**

*Type: draftCR For: (not specified)  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: ZTE Wistron Telecom AB*

**Decision: Withdrawn.**

**R4-2209025 Draft CR for TS 38.101-2 Section 6.2.2**

*Type: draftCR For: (not specified)  
 38.101-2 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: ZTE Wistron Telecom AB*

**Decision: Postponed.**

**R4-2209026 Draft CR for TS 38.101-2 Section 6.2.2**

*Type: draftCR For: (not specified)  
 38.101-2 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Decision: Withdrawn.**

**R4-2209027 Draft CR for TS 38.101-2 Section 6.2.2**

*Type: draftCR For: (not specified)  
 38.101-2 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: ZTE Wistron Telecom AB*

**Decision: Withdrawn.**

**R4-2209092 Draft CR to 38.101-1 R16 adding the missing additional spurious emission requirement for CA\_NC\_NS\_04**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: (Rel-16)  
  
 Source: Xiaomi*

**Decision: Revised to R4-2210687 (from R4-2209092).**

**R4-2210687 Draft CR to 38.101-1 R16 adding the missing additional spurious emission requirement for CA\_NC\_NS\_04**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: (Rel-16)  
  
 Source: Xiaomi*

**Decision: Endorsed.**

**R4-2209093 Draft CR to 38.101-1 R17 adding the missing additional spurious emission requirement for CA\_NC\_NS\_04**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Xiaomi*

**Decision: Endorsed.**

**R4-2209149 FR1 UL coherent MIMO**

*Type: discussion For: Approval  
 Source: Anritsu Limited*

**Decision: Noted.**

**R4-2209150 Draft CR to add ‘Annex G Difference of relative phase and power errors’ for FR1 UL coherent MIMO**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Anritsu Limited*

**Decision: Revised to R4-2210682 (from R4-2209150).**

**R4-2210682 Draft CR to add ‘Annex G Difference of relative phase and power errors’ for FR1 UL coherent MIMO**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Anritsu Limited*

**Decision: Endorsed.**

**R4-2209151 Draft CR to add ‘Annex G Difference of relative phase and power errors’ for FR1 UL coherent MIMO**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Anritsu Limited*

**Decision: Endorsed.**

**R4-2209152 Draft CR to add ‘Annex G Difference of relative phase and power errors’ for FR1 UL coherent MIMO**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Anritsu Limited*

**Decision: Endorsed.**

**R4-2209160 Draft CR to modify MPR and AMPR definitions for almost contiguous allocations**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Anritsu Limited*

**Decision: Withdrawn.**

**R4-2209161 Draft CR to modify MPR and AMPR definitions for almost contiguous allocations**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Anritsu Limited*

**Decision: Withdrawn.**

**R4-2209162 Draft CR to modify MPR and AMPR definitions for almost contiguous allocations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Anritsu Limited*

**Decision: Withdrawn.**

**R4-2210346 Draft CR to modify MPR and AMPR definitions for almost contiguous allocations**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Anritsu Limited*

**Decision: Not pursued.**

**R4-2210347 Draft CR to modify MPR and AMPR definitions for almost contiguous allocations**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Anritsu Limited*

**Decision: Not pursued.**

**R4-2210348 Draft CR to modify MPR and AMPR definitions for almost contiguous allocations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Anritsu Limited*

**Decision: Withdrawn.**

**R4-2209310 draftCR for TS 38.101-1 Rel-15: Corrections on Single Bands Coex**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Revised to R4-2210683 (from R4-2209310).**

**R4-2210683 draftCR for TS 38.101-1 Rel-15: Corrections on Single Bands Coex**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2209311 draftCR for TS 38.101-1 Rel-16: Corrections on Single Bands Coex**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2209312 draftCR for TS 38.101-1 Rel-17: Corrections on Single Bands Coex**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2209313 draftCR for TS 36.101 Rel-15: Corrections on Single Bands Coex**

*Type: draftCR For: Endorsement  
 36.101 v15.18.0 CR- rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Revised to R4-2210690 (from R4-2209313).**

**R4-2210690 draftCR for TS 36.101 Rel-15: Corrections on Single Bands Coex**

*Type: draftCR For: Endorsement  
 36.101 v15.18.0 CR- rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2209314 draftCR for TS 36.101 Rel-16: Corrections on Single Bands Coex**

*Type: draftCR For: Endorsement  
 36.101 v16.13.0 CR- rev Cat: A (Rel-16)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2209315 draftCR for TS 36.101 Rel-17: Corrections on Single Bands Coex**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2209324 Draft CR for TS 36.101: P-Max definition correction for bands other than Band 41**

*Type: draftCR For: Endorsement  
 36.101 v15.18.0 CR- rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Postponed.**

**R4-2209325 Draft CR for TS 36.101: P-Max definition correction for bands other than Band 41**

*Type: draftCR For: Endorsement  
 36.101 v16.13.0 CR- rev Cat: (Rel-16)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2209326 Draft CR for TS 36.101: P-Max definition correction for bands other than Band 41**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2209334 Draft CR for 38.101-1 to add note 5 for band n83(R15)**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209335 Draft CR for 38.101-1 to add note 5 for band n83(R16)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209336 Draft CR for 38.101-1 to add note 5 for band n83(R17)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209337 Draft CR for 38.101-1 to clarify the restriction of band n28 for CA\_n20-n28(R16)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210688 (from R4-2209337).**

**R4-2210688 Draft CR for 38.101-1 to clarify the restriction of band n28 for CA\_n20-n28(R16)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209338 Draft CR for 38.101-1 to clarify the restriction of band n28 for CA\_n20-n28(R17)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209342 Draft CR for 38.101-1 to add the missing simultaneous Rx/Tx capability for SUL band combinations (R16)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209343 Draft CR for 38.101-1 to add the missing simultaneous Rx/Tx capability for SUL band combinations (R17)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209344 Draft CR for 38.101-1 to mainteinance NR V2X UE spec (R16)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210689 (from R4-2209344).**

**R4-2210689 Draft CR for 38.101-1 to mainteinance NR V2X UE spec (R16)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209345 Draft CR for 38.101-1 to mainteinance NR V2X UE spec (R17)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209350 Draft CR for 38.101-1 to add exception clause for inter-band CA REFSENS (R16)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209351 Draft CR for 38.101-1 to add exception clause for inter-band CA REFSENS (R17)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209380 Draft CR on clarification of Tx DC location in FR1 CA (R16)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: OPPO*

**Decision: Merged (with R4-221xxxx).**

**R4-2209381 Draft CR on clarification of Tx DC location in FR1 CA (R17 CAT-A)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: OPPO*

**Decision: Withdrawn.**

**R4-2209752 draft CR for TS 38.101-1: correction for DC location reporting (R16 cat-F)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2211162 (from R4-2209752).**

**R4-2211162 draft CR for TS 38.101-1: correction for DC location reporting (R16 cat-F)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209753 draft CR for TS 38.101-1: correction for DC location reporting (R17 cat-A)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209782 A draft CR to clarify the 100 kHz channel raster applicability**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Not pursued.**

**R4-2209783 A draft CR to clarify the 100 kHz channel raster applicability**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2209784 A draft CR to clarify the 100 kHz channel raster applicability**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2210109 CR to TS 38.101-3 V16.11.0 on intra-band ULCA UL configurations**

*Type: CR For: Agreement  
 38.101-3 v16.11.0 CR-0729 rev Cat: F (Rel-16)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Providing corrections to missing DC\_1C\_n3A MSD

**Decision: Endorsed.**

**R4-2210201 Correction to out-of-band blocking ranges**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2210202 Correction to out-of-band blocking ranges**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2210203 Correction to out-of-band blocking ranges**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

##### 4.1.1.2 FR2 (38.101-2)

**R4-2207671 Draft CR for TS 38.101-2: Change FR2 ACLR verification test metric**

*Type: draftCR For: Endorsement  
 38.101-2 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Not pursued.**

**R4-2207672 Draft CR for TS 38.101-2: Change FR2 ACLR verification test metric**

*Type: draftCR For: Endorsement  
 38.101-2 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2207673 Draft CR for TS 38.101-2: Change FR2 ACLR verification test metric**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2207674 EIRP-based test metric for FR2 SEM verifications**

*Type: other For: Approval  
 38.101-2 v CR- rev Cat: (Rel-15)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2207675 Draft CR for TS 38.101-2: Change FR2 SEM verification test metric**

*Type: draftCR For: Endorsement  
 38.101-2 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Postponed.**

**R4-2207676 Draft CR for TS 38.101-2: Change FR2 SEM verification test metric**

*Type: draftCR For: Endorsement  
 38.101-2 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2207677 Draft CR for TS 38.101-2: Change FR2 SEM verification test metric**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2207786 Correction of FR2 UE configured transmitted power**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2207883 CR for 38.101-2-fh0: Correction for PC3 MPRnarrow**

*Type: CR For: Agreement  
 38.101-2 v15.17.0 CR-0453 rev Cat: F (Rel-15)  
  
 Source: Keysight Technologies UK Ltd, Skyworks Solutions Inc.*

**Decision: Endorsed.**

**R4-2207884 CR for 38.101-2-gb0: Correction for PC3 MPRnarrow**

*Type: CR For: Agreement  
 38.101-2 v16.11.0 CR-0454 rev Cat: F (Rel-16)  
  
 Source: Keysight Technologies UK Ltd, Skyworks Solutions Inc.*

**Decision: Endorsed.**

**R4-2207885 CR for 38.101-2-h50: Correction for PC3 MPRnarrow**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0455 rev Cat: A (Rel-17)  
  
 Source: Keysight Technologies UK Ltd, Skyworks Solutions Inc.*

**Decision: Endorsed.**

**R4-2208611 draft CR to remove the LO exception of SEM in FR2**

*Type: draftCR For: Endorsement  
 38.101-2 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: vivo*

**Decision: Not pursued.**

**R4-2208612 draft CR to remove the LO exception of SEM in FR2**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: vivo*

**Decision: Withdrawn.**

**R4-2208871 Draft CR for clarification on Maximum input and ACS and IBB for FR2 DL intra and inter combinations for TS 38.101-2**

*Type: draftCR For: Endorsement  
 38.101-2 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: NTT DOCOMO, INC*

**Decision: Postponed.**

**R4-2208872 Draft CR for clarification on Maximum input and ACS and IBB for FR2 DL intra and inter combinations for TS 38.101-2**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: NTT DOCOMO, INC*

**Abstract:**

Rel-17 Cat A CR

**Decision: Withdrawn.**

**R4-2209378 Draft CR on clarification of PMPR in FR2 (R16)**

*Type: draftCR For: Endorsement  
 38.101-2 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: OPPO*

**Decision: Revised to R4-2211192 (from R4-2209378).**

**R4-2211192 Draft CR on clarification of PMPR in FR2 (R16)**

*Type: draftCR For: Endorsement  
 38.101-2 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: OPPO*

**Decision: Endorsed.**

**R4-2209379 Draft CR on clarification of PMPR in FR2 (R17 CAT-A)**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: OPPO*

**Decision: Endorsed.**

**R4-2209383 Draft CR on clarification of Tx DC location in FR2 CA (R16)**

*Type: draftCR For: Endorsement  
 38.101-2 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: OPPO*

**Decision: Postponed.**

**R4-2209402 Draft CR on clarification of Tx DC location in FR2 CA (R17 CAT-A)**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: OPPO*

**Decision: Withdrawn.**

**R4-2209626 Draft CR to TS 38.101-2 on UE multi-band relaxation factors for PC3**

*Type: draftCR For: Approval  
 38.101-2 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2208634 Draft CR to TS 38.101-2 on corrections to RF requirement applicability(R15)**

*Type: draftCR For: Approval  
 38.101-2 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: vivo*

**Decision: Not pursued.**

**R4-2208635 Draft CR to TS 38.101-2 on corrections to RF requirement applicability(R16)**

*Type: draftCR For: Approval  
 38.101-2 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: vivo*

**Decision: Withdrawn.**

**R4-2208636 Draft CR to TS 38.101-2 on corrections to RF requirement applicability(R17)**

*Type: draftCR For: Approval  
 38.101-2 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: vivo*

**Decision: Withdrawn.**

##### 4.1.1.3 Requirements for 38.101-3

**R4-2207824 Draft CR for 38.101-3: Missing definitions of PEMAX\_NE-DC in Pcmax formulae (R15)**

*Type: draftCR For: Endorsement  
 38.101-3 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: SoftBank Corp.*

**Abstract:**

In configured output power section for Inter-band NE-DC, a term PEMAX, NE-DC is not defined.

**Decision: Endorsed.**

**R4-2207825 Draft CR for 38.101-3: Missing definitions of PEMAX\_NE-DC in Pcmax formulae (R16)**

*Type: draftCR For: Endorsement  
 38.101-3 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: SoftBank Corp.*

**Abstract:**

Mirror CR (but some minor corrections have already been made in R16

**Decision: Endorsed.**

**R4-2207826 Draft CR for 38.101-3: Missing definitions of PEMAX\_NE-DC in Pcmax formulae (R17)**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: SoftBank Corp.*

**Abstract:**

Mirror CR (but some minor corrections have already been made in R17).

**Decision: Endorsed.**

**R4-2208782 Discussion on intra-band EN-DC combination**

*Type: discussion For: Approval  
 Source: Google Inc., Comcast, Federated Wireless, CableLabs*

**Decision: Noted.**

**R4-2208783 Draft CR for 38.101-3 Rel-16 intra-band contiguous EN-DC band combination**

*Type: draftCR For: Agreement  
 38.101-3 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Google Inc., Comcast, Federated Wireless, CableLabs*

**Decision: Postponed.**

**R4-2208784 Draft CR for 38.101-3 Rel-17 intra-band contiguous EN-DC band combination**

*Type: draftCR For: Agreement  
 38.101-3 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Google Inc., Comcast, Federated Wireless, CableLabs*

**Decision: Withdrawn.**

**R4-2208785 Draft CR for 38.101-3 Rel-16 intra-band non-contiguous EN-DC band combination**

*Type: draftCR For: Agreement  
 38.101-3 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Google Inc., Comcast, Federated Wireless, CableLabs*

**Decision: Postponed.**

**R4-2208786 Draft CR for 38.101-3 Rel-17 intra-band non-contiguous EN-DC band combination**

*Type: draftCR For: Agreement  
 38.101-3 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Google Inc., Comcast, Federated Wireless, CableLabs*

**Decision: Withdrawn.**

**R4-2208855 Discussion on intrabandENDC-Support**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2208856 Draft CR for 38.101-3 Rel-16 to correct band combination for intra-band ENDC**

*Type: draftCR For: Endorsement  
 38.101-3 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Xiaomi*

**Decision: Postponed.**

**R4-2208857 Draft CR for 38.101-3 Rel-17 to correct band combination for intra-band ENDC**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Xiaomi*

**Decision: Withdrawn.**

**R4-2208868 Draft CR for correction on missing band configuration in MSD table for IM**

*Type: draftCR For: Endorsement  
 38.101-3 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: NTT DOCOMO, INC*

**Decision: Endorsed.**

**R4-2208869 Draft CR for correction on missing band configuration in MSD table for IM**

*Type: draftCR For: Endorsement  
 38.101-3 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: NTT DOCOMO, INC*

**Abstract:**

Rel-16 Cat A CR

**Decision: Endorsed.**

**R4-2208870 Draft CR for correction on missing band configuration in MSD table for IM**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: NTT DOCOMO, INC*

**Abstract:**

Rel-17 Cat A CR

**Decision: Endorsed.**

**R4-2209271 Draft CR on Pemax clarification in 38.101-3 (R15)**

*Type: draftCR For: Endorsement  
 38.101-3 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: OPPO*

**Decision: Merged (with R4-2210204).**

**R4-2209328 Draft CR on Pemax clarification in 38.101-3 (R16 CAT-A)**

*Type: draftCR For: Endorsement  
 38.101-3 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: OPPO*

**Decision: Withdrawn.**

**R4-2209333 Draft CR on Pemax clarification in 38.101-3 (R17 CAT-A)**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: OPPO*

**Decision: Withdrawn.**

**R4-2209339 Draft CR for 38.101-3 to clarify the restriction of band n28 for DC\_20\_n28(R15)**

*Type: draftCR For: Endorsement  
 38.101-3 v15.17.0 CR- rev Cat: (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209340 Draft CR for 38.101-3 to clarify the restriction of band n28 for DC\_20\_n28(R16)**

*Type: draftCR For: Endorsement  
 38.101-3 v16.11.0 CR- rev Cat: (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209341 Draft CR for 38.101-3 to clarify the restriction of band n28 for DC\_20\_n28(R17)**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209352 Draft CR for 38.101-3 to add DC\_3C-7A-8A\_n1A due to missing implementation (R16)**

*Type: draftCR For: Endorsement  
 38.101-3 v16.11.0 CR- rev Cat: (Rel-16)  
  
 Source: Huawei, HiSilicon, DT*

**Decision: Endorsed.**

**R4-2209353 Draft CR for 38.101-3 to add DC\_3C-7A-8A\_n1A due to missing implementation (R17)**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, DT*

**Decision: Endorsed.**

**R4-2209627 Draft CR to TS 38.307 on NR intra-band CA bandwidth class within FR1 (Rel-16)**

*Type: draftCR For: Approval  
 38.307 v16.10.0 CR- rev Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2209628 Draft CR to TS 38.307 on NR intra-band CA bandwidth class within FR1 (Rel-17)**

*Type: draftCR For: Approval  
 38.307 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2209629 Draft CR to TS 38.307 on requirements for NR UE power class for FR1 (Rel-16)**

*Type: draftCR For: Approval  
 38.307 v16.10.0 CR- rev Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2209630 Draft CR to TS 38.307 on requirements for NR UE power class for FR1 (Rel-17)**

*Type: draftCR For: Approval  
 38.307 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2209925 Correction of DC\_3C\_n7A-n78(2A)**

*Type: draftCR For: Approval  
 38.101-3 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Nokia*

**Decision: Endorsed.**

#### 4.1.2 BS RF requirements

##### 4.1.2.1 General

##### 4.1.2.2 TX/RX requirements (38.104)

##### 4.1.2.3 MSR and eAAS specifications

#### 4.1.3 BS conformance testing

##### 4.1.3.1 General

##### 4.1.3.2 Conducted conformance testing (38.141-1)

##### 4.1.3.3 Radiated conformance testing (38.141-2)

##### 4.1.3.4 OAT BS testing

#### 4.1.4 UE/BS EMC requirements

#### 4.1.5 RRM requirements

**[103-e][201] Maintenance\_R15\_R16\_RRM, AI 4.1.5 – Li Zhang**

**R4-2210273 Email discussion summary for [103-e][201] Maintenance\_R15\_R16\_RRM**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210470 (from R4-2210273).**

**R4-2210470 Email discussion summary for [103-e][201] Maintenance\_R15\_R16\_RRM**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210581 | WF on R15 and R16 RRM maintenance | Huawei, Hisilicon | WF to capture agreements for open issues |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2207787](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207787.zip) |  | CR for eMIMO requirements maintenance (Rel-16) | Apple | Endorsed |  |
| [R4-2207875](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207875.zip) | R4-2211164 | Maintenance CR for RRM requirements on 38.133 R16 | MediaTek (Shenzhen) Inc. | Revised |  |
| [R4-2207877](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207877.zip) |  | Maintenance CR for V2X Te requirements on 38.133 R16 | MediaTek (Shenzhen) Inc. | Endorsed |  |
| [R4-2207941](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207941.zip) | R4-2210958 | draft Cat-F CR (R15) to SCell Activation Core | Qualcomm Incorporated | Revised |  |
| [R4-2207944](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207944.zip) | R4-2210959 | draft Cat-F CR (R16) to SCell Activation Core | Qualcomm Incorporated | Revised |  |
| [R4-2207946](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207946.zip) | R4-2210960 | draft Cat-F CR (R16) to SCell Activation Core NR-U | Qualcomm Incorporated | Revised |  |
| [R4-2208829](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208829.zip) |  | Draft CR to TS 38.133 Correction to Rel-16 IDLE CA&DC measurements requirements | vivo | Endorsed |  |
| [R4-2208830](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208830.zip) |  | Draft CR to TS 38.133 Correction to Rel-17 IDLE CA&DC measurements requirements | vivo | Endorsed |  |
| [R4-2208831](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208831.zip) |  | Draft CR to TS 36.133 Correction to IDLE DC measurements requirements\_R16 | vivo | Endorsed |  |
| [R4-2208836](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208836.zip) | R4-2210961 | Draft CR to 38.133 correction to NR positioning measurement requirements | vivo | Revised |  |
| [R4-2208848](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208848.zip) |  | CR to TS38.133 for the editorial correction on L1-SINR scheduling restriction | Samsung | Endorsed |  |
| [R4-2208909](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208909.zip) | R4-2210962 | Correction to NR SCell activation interruption requirements 38133\_r15 | Huawei, Hisilicon | Revised |  |
| [R4-2208912](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208912.zip) | R4-2210963 | Correction to NR SCell activation interruption requirements 36133\_r15 | Huawei, Hisilicon | Revised |  |
| [R4-2208915](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208915.zip) | R4-2211197 | Correction to paging interruption during reselection requirements\_r15 | Huawei, Hisilicon | Revised |  |
| [R4-2208916](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208916.zip) | R4-2210964 | Correction to paging interruption during reselection requirements\_r16 | Huawei, Hisilicon | Revised |  |
| [R4-2208922](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208922.zip) | R4-2210965 | Correction to HST inter-RAT NR cell reselection requirements\_r16 | Huawei, Hisilicon | Revised |  |
| [R4-2208924](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208924.zip) | R4-2210966 | Correction to HST intra-NR cell-reselection requirements\_r16 | Huawei, Hisilicon | Revised |  |
| [R4-2208927](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208927.zip) |  | Draft CR on requirements maintenance for NR-U 36133 R16 | Huawei, Hisilicon | Return to | Missed from first round discussion |
| [R4-2208929](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208929.zip) |  | Draft CR on requirements maintenance for NR-U 38133 R16 | Huawei, Hisilicon | Endorsed |  |
| [R4-2208931](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208931.zip) |  | Draft CR on maintenance for IAB R16 | Huawei, Hisilicon | Endorsed |  |
| [R4-2208933](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208933.zip) |  | Draft CR on adding NR bands groups for NB-IoT R16 | Huawei, Hisilicon | Endorsed |  |
| [R4-2208956](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208956.zip) |  | Clarification on asynchronous DAPS handover R16 | Huawei, Hisilicon | Return to |  |
| [R4-2208988](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208988.zip) | R4-2210967 | DraftCR on maintaining PL-RS switching delay requirements R16 | Huawei, Hisilicon | Revised |  |
| [R4-2209186](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209186.zip) |  | CR on CSSF outside MG R15 | Huawei, Hisilicon | Return to |  |
| [R4-2209189](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209189.zip) | R4-2210968 | CR on beam level EMR requirements 36133 R16 | Huawei, Hisilicon | Revised |  |
| [R4-2209191](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209191.zip) | R4-2210970 | CR on beam level EMR requirements 38133 R16 | Huawei, Hisilicon | Revised |  |
| [R4-2209194](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209194.zip) | R4-2210969 | CR on PRS meausurement period R16 | Huawei, Hisilicon | Revised |  |
| [R4-2209199](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209199.zip) | R4-2210971 | CR to multiple SCell activation requirements R16 | Huawei, Hisilicon | Revised |  |
| [R4-2209201](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209201.zip) |  | CR on CGI reading requirements R16 | Huawei, Hisilicon | Endorsed |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2207646](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207646.zip) |  | Draft CR to FR1 DCI-based BWP switch TCs | Anritsu Corporation | Return to |  |
| [R4-2207648](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207648.zip) |  | Draft CR to FR1 DCI-based BWP switch TCs and FR2 CSI-RS based RLM | Anritsu Corporation | Return to |  |
| [R4-2207649](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207649.zip) |  | Draft CR to Cell reselection to FR1 intra-frequency NR case | Anritsu Corporation | Endorsed |  |
| [R4-2207748](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207748.zip) | R4-2210972 | draftCR on applicabiltiy for test Cases involving E-UTRA/FR1 and FR2 carriers (R15) | Apple | Revised |  |
| [R4-2207789](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207789.zip) | R4-2210973 | CR for Spatial relation info switch testcase maintenance (Rel-16) | Apple | Revised |  |
| [R4-2207948](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207948.zip) | R4-2211186 | draft Cat-F CR (R15) to SCell Activation Test Cases | Qualcomm Incorporated | Revised |  |
| [R4-2207951](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207951.zip) | R4-2210974 | draft Cat-F CR (R16) to SCell Activation Test Cases and SRS configuration | Qualcomm Incorporated | Revised |  |
| [R4-2207953](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207953.zip) | R4-2211187 | draft Cat-F CR (R16) to SCell Activation Test Cases NR-U | Qualcomm Incorporated | Return to |  |
| [R4-2208162](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208162.zip) | R4-2210975 | Draft CR on HST FR1 L1-RSRP test cases | CATT | Revised |  |
| [R4-2208164](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208164.zip) |  | Draft CR on test case for cell reselection for power saving | CATT | Return to |  |
| [R4-2208166](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208166.zip) |  | Draft CR to add missing SMTC pattern | CATT | Endorsed |  |
| [R4-2208167](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208167.zip) |  | Draft CR on radio link monitoring test cases in FR1 | CATT | Return to |  |
| [R4-2208202](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208202.zip) | R4-2210976 | Draft CR on R16 NR positioning test cases of general configurations and measurement delay requirements | CATT | Revised |  |
| [R4-2208204](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208204.zip) | R4-2210977 | Draft CR on R16 NR positioning test case of accuracy requirements | CATT | Revised |  |
| [R4-2208341](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208341.zip) | R4-2210978 | CR to maintain test case of PScell addition and release delay (A4.5.7)\_R15 | OPPO | Revised | Technically agreeable, revised to correct cover sheet |
| [R4-2208344](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208344.zip) |  | CR to maintain inter-RAT measurements subject to CCA in TS 36.133(R16) | OPPO | Return to |  |
| [R4-2208834](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208834.zip) |  | Draft CR to 38.133 correction to NR positioning accuracy requirements | vivo | Merged | Merged to R4-2210182 |
| [R4-2208906](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208906.zip) |  | Correction to cell reselection test case\_r15 | Huawei, Hisilicon | Endorsed |  |
| [R4-2208918](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208918.zip) |  | Correction to SRS reference configuration\_r16 | Huawei, Hisilicon | Merged | Merged to R4-2207951 |
| [R4-2208920](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208920.zip) | R4-2210979 | Correction to eMIMO BFD test cases\_r16 | Huawei, Hisilicon | Revised |  |
| [R4-2208985](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208985.zip) | R4-2210980 | Update to UL switching test cases | Huawei, Hisilicon | Revised |  |
| [R4-2208990](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208990.zip) | R4-2210981 | DraftCR on maintaining L1-SINR measurement test cases R16 | Huawei, Hisilicon | Revised |  |
| [R4-2209076](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209076.zip) |  | draft CR: Correction of NR-U RRM test cases | Ericsson | Endorsed |  |
| [R4-2209078](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209078.zip) |  | draft CR: Correction of PRACH configuration parameter for inter-RAT test | Ericsson | Endorsed |  |
| [R4-2209197](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209197.zip) | R4-2210982 | CR on accuracy requirements for positioning measurement R16 | Huawei, Hisilicon | Revised | Capture all changes for RSTD accuracy |
| [R4-2209609](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209609.zip) |  | Draft CR to TS 38.133: Corrections to intra-frequency event triggered test cases (Rel 15) | Rohde & Schwarz | Endorsed |  |
| [R4-2209612](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209612.zip) |  | Draft CR to TS 38.133: Corrections to beam failure and link recovery test cases (Rel 15) | Rohde & Schwarz | Endorsed |  |
| [R4-2210091](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210091.zip) |  | Draft CR 38.133 on DAPS handover test case | MediaTek Inc. | Endorsed |  |
| [R4-2210182](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210182.zip) | R4-2210983 | Updates to accuracy requirements for UE positioning measurements in TS 38.133 | Ericsson | Revised | Capture all changed for UE Rx-Tx accuracy |
| [R4-2210184](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210184.zip) |  | Correction to conditions for NR PRS-based measurements in TS 38.133 | Ericsson | Merged | Merged to R4-2208202 |
| [R4-2210225](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210225.zip) |  | DraftCR - Correction of margins for UE Rx-Tx accuracy requirements | Qualcomm Incorporated | Merged | Merged to R4-2210182 |
| R4-2207731 |  | SRS configuration correction | Qualcomm Incorporated | Not Pursued | Same change is proposed in [R4-2207951](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207951.zip) |
| R4-2208734 |  | [dCR] Maintenance for IAB-MT test cases R16 | ZTE Corporation | Endorsed |  |
| R4-2208198 | R4-2211165 | Draft CR on TS 36.171 requirements for support of A-GNSS | CATT, CAICT, CENC | Revised |  |
| R4-2208200 | R4-2211166 | Draft CR on TS 38.171 requirements for support of A-GNSS | CATT, CAICT, CENC | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210581 | R4-2211210 | WF on R15 and R16 RRM maintenance | Huawei, Hisilicon | Approved | To capture agreement for issue 2-2-4 |
| R4-2211164 |  | Maintenance CR for RRM requirements on 38.133 R16 | MediaTek (Shenzhen) Inc. | Endorsed |  |
| R4-2210958 |  | draft Cat-F CR (R15) to SCell Activation Core | Qualcomm Incorporated | Endorsed |  |
| R4-2210959 |  | draft Cat-F CR (R16) to SCell Activation Core | Qualcomm Incorporated | Endorsed |  |
| R4-2210960 |  | draft Cat-F CR (R16) to SCell Activation Core NR-U | Qualcomm Incorporated | Endorsed |  |
| R4-2210961 | R4-2211211 | Draft CR to 38.133 correction to NR positioning measurement requirements | vivo | Endorsed | Change to capture the agreement of Option 2. |
| R4-2210962 |  | Correction to NR SCell activation interruption requirements 38133\_r15 | Huawei, Hisilicon | Endorsed |  |
| R4-2210963 |  | Correction to NR SCell activation interruption requirements 36133\_r15 | Huawei, Hisilicon | Endorsed |  |
| R4-2211197 |  | Correction to paging interruption during reselection requirements\_r15 | Huawei, Hisilicon | Endorsed |  |
| R4-2210964 |  | Correction to paging interruption during reselection requirements\_r16 | Huawei, Hisilicon | Endorsed |  |
| R4-2210965 |  | Correction to HST inter-RAT NR cell reselection requirements\_r16 | Huawei, Hisilicon | Postponed |  |
| R4-2210966 |  | Correction to HST intra-NR cell-reselection requirements\_r16 | Huawei, Hisilicon | Postponed |  |
| [R4-2208927](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208927.zip) |  | Draft CR on requirements maintenance for NR-U 36133 R16 | Huawei, Hisilicon | Endorsed |  |
| [R4-2208956](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208956.zip) |  | Clarification on asynchronous DAPS handover R16 | Huawei, Hisilicon | Endorsed |  |
| R4-2210967 |  | DraftCR on maintaining PL-RS switching delay requirements R16 | Huawei, Hisilicon | Postponed |  |
| [R4-2209186](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209186.zip) |  | CR on CSSF outside MG R15 | Huawei, Hisilicon | Endorsed |  |
| R4-2210968 |  | CR on beam level EMR requirements 36133 R16 | Huawei, Hisilicon | Endorsed |  |
| R4-2210970 |  | CR on beam level EMR requirements 38133 R16 | Huawei, Hisilicon | Endorsed |  |
| R4-2210969 |  | CR on PRS meausurement period R16 | Huawei, Hisilicon | Endorsed |  |
| R4-2210971 |  | CR to multiple SCell activation requirements R16 | Huawei, Hisilicon | Endorsed |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2207646](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207646.zip) |  | Draft CR to FR1 DCI-based BWP switch TCs | Anritsu Corporation | Endorsed |  |
| [R4-2207648](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207648.zip) |  | Draft CR to FR1 DCI-based BWP switch TCs and FR2 CSI-RS based RLM | Anritsu Corporation | Endorsed |  |
| R4-2210972 |  | draftCR on applicabiltiy for test Cases involving E-UTRA/FR1 and FR2 carriers (R15) | Apple | Endorsed |  |
| R4-2210973 |  | CR for Spatial relation info switch testcase maintenance (Rel-16) | Apple | Endorsed | Pending Nokia comment |
| R4-2211186 |  | draft Cat-F CR (R15) to SCell Activation Test Cases | Qualcomm Incorporated | Endorsed |  |
| R4-2210974 |  | draft Cat-F CR (R16) to SCell Activation Test Cases and SRS configuration | Qualcomm Incorporated | Endorsed |  |
| R4-2211187 |  | draft Cat-F CR (R16) to SCell Activation Test Cases NR-U | Qualcomm Incorporated | Endorsed |  |
| R4-2210975 |  | Draft CR on HST FR1 L1-RSRP test cases | CATT | Endorsed |  |
| [R4-2208164](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208164.zip) |  | Draft CR on test case for cell reselection for power saving | CATT | Endorsed |  |
| [R4-2208167](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208167.zip) |  | Draft CR on radio link monitoring test cases in FR1 | CATT | Endorsed |  |
| R4-2210976 |  | Draft CR on R16 NR positioning test cases of general configurations and measurement delay requirements | CATT | Endorsed |  |
| R4-2210977 |  | Draft CR on R16 NR positioning test case of accuracy requirements | CATT | Endorsed |  |
| R4-2210978 |  | CR to maintain test case of PScell addition and release delay (A4.5.7)\_R15 | OPPO | Endorsed |  |
| [R4-2208344](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208344.zip) |  | CR to maintain inter-RAT measurements subject to CCA in TS 36.133(R16) | OPPO | Endorsed |  |
| R4-2210979 |  | Correction to eMIMO BFD test cases\_r16 | Huawei, Hisilicon | Endorsed |  |
| R4-2210980 |  | Update to UL switching test cases | Huawei, Hisilicon | Endorsed |  |
| R4-2210981 |  | DraftCR on maintaining L1-SINR measurement test cases R16 | Huawei, Hisilicon | Endorsed |  |
| R4-2210982 | R4-2211212 | CR on accuracy requirements for positioning measurement R16 | Huawei, Hisilicon | Endorsed | Editorial note for the different tables  The revised version is agreeable |
| R4-2210983 |  | Updates to accuracy requirements for UE positioning measurements in TS 38.133 | Ericsson | Endorsed |  |
| R4-2211165 |  | Draft CR on TS 36.171 requirements for support of A-GNSS | CATT, CAICT, CENC | Endorsed |  |
| R4-2211166 |  | Draft CR on TS 38.171 requirements for support of A-GNSS | CATT, CAICT, CENC | Endorsed |  |

**R4-2210581 WF on R15 and R16 RRM maintenance**

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

**Decision: Revised to R4-2211210 (from R4-2210581).**

**R4-2211210 WF on R15 and R16 RRM maintenance**

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

**Decision: Approved.**

**GTW on May-20**

**Issue 2-2-4: Applicability of UE Rx-Tx accuracy requirements in case of UE autonomous timing adjustment**

* FFS Applicability of UE Rx-Tx accuracy requirements in case of UE autonomous timing adjustment
  + Option 2
    - UE Rx-Tx measurement accuracy requirements shall apply for a cell, which is also the downlink reference cell (defined in section 7.1.1)
    - UE Rx-Tx measurement accuracy requirements shall not apply for a cell, which is not the downlink reference cell (defined in section 7.1.1) for SRS transmission. UE may restart the measurement period in such case
  + Option 3a
    - UE Rx-Tx measurement accuracy requirements shall apply if the uplink transmission timing changes during the UE Rx-Tx measurement period due to autonomous adjustment.
    - UE may restart the measurement period in such case and measurement period requirements may not apply.
  + Option 3b
    - UE Rx-Tx measurement accuracy requirements shall apply if the uplink transmission timing changes during the UE Rx-Tx measurement period due to autonomous adjustment.
    - UE may restart the measurement period in such case and measurement period will be extended accordingly.

**Agreement:** Agree on Option 2.

* If the problem for UE behavior is identified in the future, the agreement can be revisited

##### 4.1.5.1 RRM core requirements (38.133/36.133)

**R4-2207787 CR for eMIMO requirements maintenance (Rel-16)**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2207788 CR for eMIMO requirements maintenance (Rel-17)**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2207875 Maintenance CR for RRM requirements on 38.133 R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: MediaTek (Shenzhen) Inc.*

**Decision: Revised to R4-2211164 (from R4-2207875).**

**R4-2211164 Maintenance CR for RRM requirements on 38.133 R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: MediaTek (Shenzhen) Inc.*

**Decision: Endorsed.**

**R4-2207876 Maintenance CR for RRM requirements on 38.133 R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: MediaTek (Shenzhen) Inc.*

**Decision: Endorsed.**

**R4-2207877 Maintenance CR for V2X Te requirements on 38.133 R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: MediaTek (Shenzhen) Inc.*

**Decision: Endorsed.**

**R4-2207878 Maintenance CR for V2X Te requirements on 38.133 R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: MediaTek (Shenzhen) Inc.*

**Decision: Endorsed.**

**R4-2207941 draft Cat-F CR (R15) to SCell Activation Core**

*Type: draftCR For: Endorsement  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2210958 (from R4-2207941).**

**R4-2210958 draft Cat-F CR (R15) to SCell Activation Core**

*Type: draftCR For: Endorsement  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2207942 draft Cat-A CR (R16) to SCell Activation Core**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2207943 draft Cat-A CR (R17) to SCell Activation Core**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2207944 draft Cat-F CR (R16) to SCell Activation Core**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2210959 (from R4-2207944).**

**R4-2210959 draft Cat-F CR (R16) to SCell Activation Core**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2207945 draft Cat-A CR (R17) to SCell Activation Core**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2207946 draft Cat-F CR (R16) to SCell Activation Core NR-U**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2210960 (from R4-2207946).**

**R4-2210960 draft Cat-F CR (R16) to SCell Activation Core NR-U**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2207947 draft Cat-A CR (R17) to SCell Activation Core NR-U**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2208829 Draft CR to TS 38.133 Correction to Rel-16 IDLE CA&DC measurements requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2208830 Draft CR to TS 38.133 Correction to Rel-17 IDLE CA&DC measurements requirements**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2208831 Draft CR to TS 36.133 Correction to IDLE DC measurements requirements\_R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2208832 Draft CR to TS 36.133 Correction to IDLE DC measurements requirements\_R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2208836 Draft CR to 38.133 correction to NR positioning measurement requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: vivo*

**Decision: Revised to R4-2210961 (from R4-2208836).**

**R4-2210961 Draft CR to 38.133 correction to NR positioning measurement requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: vivo*

**Decision: Revised to R4-2211211 (from R4-2210961).**

**R4-2211211 Draft CR to 38.133 correction to NR positioning measurement requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2208837 Draft CR to 38.133 correction to NR positioning measurement requirements**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2208848 CR to TS38.133 for the editorial correction on L1-SINR scheduling restriction**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2341 rev Cat: F (Rel-17)  
  
 Source: Samsung*

**Decision: Endorsed.**

**R4-2208849 CR to TS38.133 for the editorial correction on L1-SINR scheduling restriction**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2342 rev Cat: A (Rel-17)  
  
 Source: Samsung*

**Decision: Endorsed.**

**R4-2208909 Correction to NR SCell activation interruption requirements 38133\_r15**

*Type: draftCR For: Endorsement  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210962 (from R4-2208909).**

**R4-2210962 Correction to NR SCell activation interruption requirements 38133\_r15**

*Type: draftCR For: Endorsement  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208910 Correction to NR SCell activation interruption requirements 38133\_r16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208911 Correction to NR SCell activation interruption requirements 38133\_r17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208912 Correction to NR SCell activation interruption requirements 36133\_r15**

*Type: draftCR For: Endorsement  
 36.133 v15.16.0 CR- rev Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210963 (from R4-2208912).**

**R4-2210963 Correction to NR SCell activation interruption requirements 36133\_r15**

*Type: draftCR For: Endorsement  
 36.133 v15.16.0 CR- rev Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208913 Correction to NR SCell activation interruption requirements 36133\_r16**

*Type: draftCR For: Endorsement  
 36.133 v16.13.0 CR- rev Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208914 Correction to NR SCell activation interruption requirements 36133\_r17**

*Type: draftCR For: Endorsement  
 36.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208915 Correction to paging interruption during reselection requirements\_r15**

*Type: draftCR For: Endorsement  
 36.133 v15.16.0 CR- rev Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211197 (from R4-2208915).**

**R4-2211197 Correction to paging interruption during reselection requirements\_r15**

*Type: draftCR For: Endorsement  
 36.133 v15.16.0 CR- rev Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208916 Correction to paging interruption during reselection requirements\_r16**

*Type: draftCR For: Endorsement  
 36.133 v16.13.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

additional changes are captured in CR due to difference between Rel-15 and Rel-16 Specs

**Decision: Revised to R4-2210964 (from R4-2208916).**

**R4-2210964 Correction to paging interruption during reselection requirements\_r16**

*Type: draftCR For: Endorsement  
 36.133 v16.13.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

additional changes are captured in CR due to difference between Rel-15 and Rel-16 Specs

**Decision: Endorsed.**

**R4-2208917 Correction to paging interruption during reselection requirements\_r17**

*Type: draftCR For: Endorsement  
 36.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208922 Correction to HST inter-RAT NR cell reselection requirements\_r16**

*Type: draftCR For: Endorsement  
 36.133 v16.13.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210965 (from R4-2208922).**

**R4-2210965 Correction to HST inter-RAT NR cell reselection requirements\_r16**

*Type: draftCR For: Endorsement  
 36.133 v16.13.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Postponed.**

**R4-2208923 Correction to HST inter-RAT NR cell reselection requirements\_r17**

*Type: draftCR For: Endorsement  
 36.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Withdrawn.**

**R4-2208924 Correction to HST intra-NR cell-reselection requirements\_r16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210966 (from R4-2208924).**

**R4-2210966 Correction to HST intra-NR cell-reselection requirements\_r16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Postponed.**

**R4-2208925 Correction to HST intra-NR cell-reselection requirements\_r17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Withdrawn.**

**R4-2208927 Draft CR on requirements maintenance for NR-U 36133 R16**

*Type: draftCR For: Endorsement  
 36.133 v16.13.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208928 Draft CR on requirements maintenance for NR-U 36133 R17**

*Type: draftCR For: Endorsement  
 36.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208929 Draft CR on requirements maintenance for NR-U 38133 R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208930 Draft CR on requirements maintenance for NR-U 38133 R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208931 Draft CR on maintenance for IAB R16**

*Type: draftCR For: Endorsement  
 38.174 v16.6.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208932 Draft CR on maintenance for IAB R17**

*Type: draftCR For: Endorsement  
 38.174 v17.0.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208933 Draft CR on adding NR bands groups for NB-IoT R16**

*Type: draftCR For: Endorsement  
 36.133 v16.13.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208934 Draft CR on adding NR bands groups for NB-IoT R17**

*Type: draftCR For: Endorsement  
 36.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208956 Clarification on asynchronous DAPS handover R16**

*Type: draftCR For: Endorsement  
 36.133 v16.13.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208957 Clarification on asynchronous DAPS handover R17**

*Type: draftCR For: Endorsement  
 36.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208987 Discussion on maintaining PL-RS switching delay requirements in R16**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2208988 DraftCR on maintaining PL-RS switching delay requirements R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210967 (from R4-2208988).**

**R4-2210967 DraftCR on maintaining PL-RS switching delay requirements R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208989 DraftCR on maintaining PL-RS switching delay requirements R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209186 CR on CSSF outside MG R15**

*Type: draftCR For: Endorsement  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209187 CR on CSSF outside MG R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209188 CR on CSSF outside MG R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209189 CR on beam level EMR requirements 36133 R16**

*Type: draftCR For: Endorsement  
 36.133 v16.13.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210968 (from R4-2209189).**

**R4-2210968 CR on beam level EMR requirements 36133 R16**

*Type: draftCR For: Endorsement  
 36.133 v16.13.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209190 CR on beam level EMR requirements 36133 R17**

*Type: draftCR For: Endorsement  
 36.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209191 CR on beam level EMR requirements 38133 R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210970 (from R4-2209191).**

**R4-2210970 CR on beam level EMR requirements 38133 R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209192 CR on beam level EMR requirements 38133 R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209193 Discussion on remaining issues in PRS measurement period**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209194 CR on PRS meausurement period R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210969 (from R4-2209194).**

**R4-2210969 CR on PRS meausurement period R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209195 CR on PRS meausurement period R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209199 CR to multiple SCell activation requirements R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210971 (from R4-2209199).**

**R4-2210971 CR to multiple SCell activation requirements R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209200 CR to multiple SCell activation requirements R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209201 CR on CGI reading requirements R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209202 CR on CGI reading requirements R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

##### 4.1.5.2 RRM performance requirements (38.133/36.133)

**R4-2207646 Draft CR to FR1 DCI-based BWP switch TCs**

*Type: draftCR For: Endorsement  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

Update Table A.4.5.6.1.1.1-3/A.6.5.6.1.2.1-3:

- Config 1 Active UL BWP-2 Configuration: ULBWP.1.3 -> N/A

**Decision: Endorsed.**

**R4-2207647 Draft CR to FR1 DCI-based BWP switch TCs**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Anritsu Corporation*

**Abstract:**

Update Table A.4.5.6.1.1.1-3/A.6.5.6.1.2.1-3:

- Config 1 Active UL BWP-2 Configuration: ULBWP.1.3 -> N/A

**Decision: Endorsed.**

**R4-2207648 Draft CR to FR1 DCI-based BWP switch TCs and FR2 CSI-RS based RLM**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

In addition to changes for R4-2207646/7647 (Rel-15/16), corrections of table structure are added to Table A.5.5.1.5.1-3 and A.5.5.1.6.1-3.

**Decision: Endorsed.**

**R4-2207649 Draft CR to Cell reselection to FR1 intra-frequency NR case**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Anritsu Corporation*

**Abstract:**

Change the test time value(T2,T3) to match the value described in the A.6.1.1.7.3 Test Requirements.

**Decision: Endorsed.**

**R4-2207650 Draft CR to Cell reselection to FR1 intra-frequency NR case**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Change the test time value(T2,T3) to match the value described in the A.6.1.1.7.3 Test Requirements.

**Decision: Endorsed.**

**R4-2207747 On RRM performance maintenance**

*Type: discussion For: (not specified)  
 Source: Apple*

**Decision: Noted.**

**R4-2207748 draftCR on applicabiltiy for test Cases involving E-UTRA/FR1 and FR2 carriers (R15)**

*Type: draftCR For: (not specified)  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Revised to R4-2210972 (from R4-2207748).**

**R4-2210972 draftCR on applicabiltiy for test Cases involving E-UTRA/FR1 and FR2 carriers (R15)**

*Type: draftCR For: (not specified)  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2207749 draftCR on applicabiltiy for test Cases involving E-UTRA/FR1 and FR2 carriers (R16)**

*Type: draftCR For: (not specified)  
 38.133 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2207750 draftCR on applicabiltiy for test Cases involving E-UTRA/FR1 and FR2 carriers (R17)**

*Type: draftCR For: (not specified)  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2207789 CR for Spatial relation info switch testcase maintenance (Rel-16)**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Apple*

**Decision: Revised to R4-2210973 (from R4-2207789).**

**R4-2210973 CR for Spatial relation info switch testcase maintenance (Rel-16)**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2207790 CR for Spatial relation info switch testcase maintenance (Rel-17)**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2207948 draft Cat-F CR (R15) to SCell Activation Test Cases**

*Type: draftCR For: Endorsement  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2211186 (from R4-2207948).**

**R4-2211186 draft Cat-F CR (R15) to SCell Activation Test Cases**

*Type: draftCR For: Endorsement  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2207949 draft Cat-A CR (R16) to SCell Activation Test Cases**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2207950 draft Cat-A CR (R17) to SCell Activation Test Cases**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2207951 draft Cat-F CR (R16) to SCell Activation Test Cases and SRS configuration**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2210974 (from R4-2207951).**

**R4-2210974 draft Cat-F CR (R16) to SCell Activation Test Cases and SRS configuration**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2207952 draft Cat-A CR (R17) to SCell Activation Test Cases and SRS configuration**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2207953 draft Cat-F CR (R16) to SCell Activation Test Cases NR-U**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2211187 (from R4-2207953).**

**R4-2211187 draft Cat-F CR (R16) to SCell Activation Test Cases NR-U**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2207954 draft Cat-A CR (R17) to SCell Activation Test Cases NR-U**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2208024 Remaining issues in NR positioning performance requirements**

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

**Decision: Noted.**

**R4-2208162 Draft CR on HST FR1 L1-RSRP test cases**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: CATT*

**Decision: Revised to R4-2210975 (from R4-2208162).**

**R4-2210975 Draft CR on HST FR1 L1-RSRP test cases**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208163 Draft CR on HST FR1 L1-RSRP test cases**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208164 Draft CR on test case for cell reselection for power saving**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208165 Draft CR on test case for cell reselection for power saving**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208166 Draft CR to add missing SMTC pattern**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208167 Draft CR on radio link monitoring test cases in FR1**

*Type: draftCR For: Endorsement  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208168 Draft CR on radio link monitoring test cases in FR1**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208169 Draft CR on radio link monitoring test cases in FR1**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208202 Draft CR on R16 NR positioning test cases of general configurations and measurement delay requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: CATT*

**Decision: Revised to R4-2210976 (from R4-2208202).**

**R4-2210976 Draft CR on R16 NR positioning test cases of general configurations and measurement delay requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208203 Draft CR on R16 NR positioning test cases of general configurations and measurement delay requirements**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208204 Draft CR on R16 NR positioning test case of accuracy requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: CATT*

**Decision: Revised to R4-2210977 (from R4-2208204).**

**R4-2210977 Draft CR on R16 NR positioning test case of accuracy requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208205 Draft CR on R16 NR positioning test case of accuracy requirements**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208341 CR to maintain test case of PScell addition and release delay (A4.5.7)\_R15**

*Type: CR For: Agreement  
 38.133 v15.17.0 CR-2311 rev Cat: F (Rel-15)  
  
 Source: OPPO*

**Decision: Revised to R4-2210978 (from R4-2208341).**

**R4-2210978 CR to maintain test case of PScell addition and release delay (A4.5.7)\_R15**

*Type: CR For: Agreement  
 38.133 v15.17.0 CR-2311 rev Cat: F (Rel-15)  
  
 Source: OPPO*

**Decision: Endorsed.**

**R4-2208342 CR to maintain test case of PScell addition and release delay (A4.5.7)\_R16**

*Type: CR For: Agreement  
 38.133 v16.11.0 CR-2312 rev Cat: A (Rel-16)  
  
 Source: OPPO*

**Decision: Endorsed.**

**R4-2208343 CR to maintain test case of PScell addition and release delay (A4.5.7)\_R17**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2313 rev Cat: A (Rel-17)  
  
 Source: OPPO*

**Decision: Endorsed.**

**R4-2208344 CR to maintain inter-RAT measurements subject to CCA in TS 36.133(R16)**

*Type: CR For: Agreement  
 36.133 v16.13.0 CR-7151 rev Cat: F (Rel-16)  
  
 Source: OPPO*

**Decision: Endorsed.**

**R4-2208345 CR to maintain inter-RAT measurements subject to CCA in TS 36.133(R17)**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7152 rev Cat: A (Rel-17)  
  
 Source: OPPO*

**Decision: Endorsed.**

**R4-2208469 Discussion on FR2 inter-frequency relative RSRP accuracy**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2208833 Remaining issues on measurement accuracy requirements for Rel-16 NR positioning**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208834 Draft CR to 38.133 correction to NR positioning accuracy requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: vivo*

**Decision: Merged (with R4-2210182).**

**R4-2208835 Draft CR to 38.133 correction to NR positioning accuracy requirements**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: vivo*

**Decision: Withdrawn.**

**R4-2208879 FR2 Inter-frequency Relative SS-RSRP accuracy**

*Type: discussion For: Discussion  
 Source: Anritsu Corporation*

**Abstract:**

We show our current views on the margins for FR2 Inter-frequency Relative SS-RSRP accuracy test case.

**Decision: Noted.**

**R4-2208906 Correction to cell reselection test case\_r15**

*Type: draftCR For: Endorsement  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208907 Correction to cell reselection test case\_r16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208908 Correction to cell reselection test case\_r17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208918 Correction to SRS reference configuration\_r16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Merged (with R4-2207951).**

**R4-2208919 Correction to SRS reference configuration\_r17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Withdrawn.**

**R4-2208920 Correction to eMIMO BFD test cases\_r16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210979 (from R4-2208920).**

**R4-2210979 Correction to eMIMO BFD test cases\_r16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208921 Correction to eMIMO BFD test cases\_r17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208926 Discussion on issues on Rel-15 test cases**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2208985 Update to UL switching test cases**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210980 (from R4-2208985).**

**R4-2210980 Update to UL switching test cases**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Postponed.**

**R4-2208986 Update to UL switching test cases**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208990 DraftCR on maintaining L1-SINR measurement test cases R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210981 (from R4-2208990).**

**R4-2210981 DraftCR on maintaining L1-SINR measurement test cases R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2208991 DraftCR on maintaining L1-SINR measurement test cases R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209076 draft CR: Correction of NR-U RRM test cases**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

This draft CR removes the [] from NR-U RRM beam management test cases.

**Decision: Endorsed.**

**R4-2209077 draft CR: Correction of NR-U RRM test cases**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This draft CR removes the [] from NR-U RRM beam management test cases.

**Decision: Endorsed.**

**R4-2209078 draft CR: Correction of PRACH configuration parameter for inter-RAT test**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

This draft CR corrects E-UTRAN PRACH configuration index configuration parameters for inter-RAT test.

**Decision: Endorsed.**

**R4-2209079 draft CR: Correction of PRACH configuration parameter for inter-RAT test**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This draft CR corrects E-UTRAN PRACH configuration index configuration parameters for inter-RAT test.

**Decision: Endorsed.**

**R4-2209196 Discussion on accuracy requirements for positioning measurement**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209197 CR on accuracy requirements for positioning measurement R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210982 (from R4-2209197).**

**R4-2210982 CR on accuracy requirements for positioning measurement R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211212 (from R4-2210982).**

**R4-2211212 CR on accuracy requirements for positioning measurement R16**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209198 CR on accuracy requirements for positioning measurement R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209609 Draft CR to TS 38.133: Corrections to intra-frequency event triggered test cases (Rel 15)**

*Type: draftCR For: Endorsement  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Decision: Endorsed.**

**R4-2209610 Draft CR to TS 38.133: Corrections to intra-frequency event triggered test cases (Rel 16)**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Decision: Endorsed.**

**R4-2209611 Draft CR to TS 38.133: Corrections to intra-frequency event triggered test cases (Rel 17)**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Rohde & Schwarz*

**Decision: Endorsed.**

**R4-2209612 Draft CR to TS 38.133: Corrections to beam failure and link recovery test cases (Rel 15)**

*Type: draftCR For: Endorsement  
 38.133 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Decision: Endorsed.**

**R4-2209613 Draft CR to TS 38.133: Corrections to beam failure and link recovery test cases (Rel 16)**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Decision: Endorsed.**

**R4-2209614 Draft CR to TS 38.133: Corrections to beam failure and link recovery test cases (Rel 17)**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Rohde & Schwarz*

**Decision: Endorsed.**

**R4-2210091 Draft CR 38.133 on DAPS handover test case**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: MediaTek Inc.*

**Decision: Endorsed.**

**R4-2210107 Draft CR 38.133 on DAPS handover test case**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Endorsed.**

**R4-2210181 On UE positioning performance requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On open issues related to accuracy requirements for UE positioning measurements (PRS-RSRP, RSTD and UE Rx-Tx time difference)

**Decision: Noted.**

**R4-2210182 Updates to accuracy requirements for UE positioning measurements in TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Correction and update to UE Rx-Tx time difference accuracy requirements.

**Decision: Revised to R4-2210983 (from R4-2210182).**

**R4-2210983 Updates to accuracy requirements for UE positioning measurements in TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Correction and update to UE Rx-Tx time difference accuracy requirements.

**Decision: Endorsed.**

**R4-2210183 Updates to accuracy requirements for UE positioning measurements in TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Correction and update to UE Rx-Tx time difference accuracy requirements.

**Decision: Endorsed.**

**R4-2210184 Correction to conditions for NR PRS-based measurements in TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Correction and update Es/Iot for PRS-RSRP and UE Rx-Tx measurements in annex B

**Decision: Merged (with R4-2208202).**

**R4-2210185 Correction to conditions for NR PRS-based measurements in TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Correction and update Es/Iot for PRS-RSRP and UE Rx-Tx measurements in annex B

**Decision: Withdrawn.**

**R4-2210225 DraftCR - Correction of margins for UE Rx-Tx accuracy requirements**

*Type: draftCR For: Endorsement  
 38.133 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Merged (with R4-2210182).**

#### 4.1.6 Demodulation and CSI requirements (38.101-4/38.104)

##### 4.1.6.1 UE demodulation requirements

##### 4.1.6.2 CSI requirements

##### 4.1.6.3 BS demodulation requirements

#### 4.1.7 NR MIMO OTA test methods (38.827)

## 5 Rel-17 maintenance for LTE and NR

### 5.1 Rel-17 spectrum related WIs

#### 5.1.1 Introduction of lower 6GHz NR unlicensed operation for Europe

##### 5.1.1.1 UE RF requirements

##### 5.1.1.2 BS RF requirements

#### 5.1.2 Introduction of operation in full unlicensed band 5925-7125MHz for NR

**[103-e][103] NR\_6GHz\_unlic\_full\_maintenance, AI 5.1.2 – Alexander Sayenko**

**R4-2210239 Email discussion summary for [103-e][103] NR\_6GHz\_unlic\_full\_maintenance**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210439 (from R4-2210239).**

**R4-2210439 Email discussion summary for [103-e][103] NR\_6GHz\_unlic\_full\_maintenance**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210544 | TP to TR 38.849 to on adding NS value for South Korea VLP mode | Apple, LGE | To add NS\_61 to the table summarizing usage of NS values for band n96 |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2208534 | R4-2210703 | CR on NR-U A-MPR for PC5 VLP in South Korea | LG Electronics | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210544 |  | CR to 38.849 to on adding NS value for South Korea VLP mode | Apple Inc., LG Electronics, Charter Communications Inc. | Agreed | Change the title and tdoc type |
| R4-2210703 |  | CR on NR-U A-MPR for PC5 VLP in South Korea | LG Electronics, ETRI, Charter Communications Inc., Apple Inc. | Agreed | The following statement is to be added to the meeting notes:  "NS\_61 status will be reviewed in RAN#97 pending further regulatory updates with other countries/regions" |

**R4-2210544 CR to 38.849 to on adding NS value for South Korea VLP mode**

*Type: CR For: Agreement  
 38.849 v17.0.0 CR-0001 rev- Cat: F (Rel-17)  
  
 Source: Apple, LGE*

**Decision: Agreed.**

##### 5.1.2.1 UE RF requirements

**R4-2208534 CR on NR-U A-MPR for PC5 VLP in South Korea**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1067 rev Cat: F (Rel-17)  
  
 Source: LG Electronics*

**Abstract:**

It is CR to introduce NR-U A-MPR for PC5 VLP in South Korea.

**Decision: Revised to R4-2210703 (from R4-2208534).**

**R4-2210703 CR on NR-U A-MPR for PC5 VLP in South Korea**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1067 rev Cat: F (Rel-17)  
  
 Source: LG Electronics*

**Abstract:**

It is CR to introduce NR-U A-MPR for PC5 VLP in South Korea.

Agreement: NS\_61 status will be reviewed in RAN#97 pending further regulatory updates with other countries/regions.

**Decision: Agreed.**

##### 5.1.2.2 BS RF requirements

#### 5.1.3 Introduction of 1900 MHz spectrum to 5G NR applicable for Rail Mobile Radio

#### 5.1.4 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)

#### 5.1.5 DC of 5 bands LTE inter-band CA (5DL/1L) and 1 NR band (1DL/1UL)

**R4-2208433 Summary on new request to 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*

**Abstract:**

No extention on this Rel-17 WI in RAN#95 since no remaining open combs. However, there is new request received for Rel-18 belong to this WI before May meeting. Hence we make a summary on the request to be captured in Rel-18 new basket WID. Since this WI a

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

#### 5.1.6 Downlink interruption for band combinations to conduct dynamic Tx Switching

#### 5.1.7 Addition of MSD (Maximum Sensitivity Degradation) for inter-band EN-DC combinations due to added channel bandwidths

#### 5.1.8 High power UE (power class 2) for NR FDD band

**[103-e][104] NR\_PC2\_UE\_FDD\_maintenance, AI 5.1.8 – Basaier Jialade**

**R4-2210240 Email discussion summary for [103-e][104] NR\_PC2\_UE\_FDD\_maintenance**

*Type: other For: Information  
 Source: Moderator (China Unicom)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210440 (from R4-2210240).**

**R4-2210440 Email discussion summary for [103-e][104] NR\_PC2\_UE\_FDD\_maintenance**

*Type: other For: Information  
 Source: Moderator (China Unicom)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2211172 | WF on  A-MPR for NS\_05 | Huawei, HiSilicon | 18May new tdoc |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2209180 | R4-2210701 | CR to TS38101-1 Update of PC2 A-MPR for NS\_05 | Huawei, HiSilicon | Revised |  |
| R4-2208685 | R4-2210702 | CR to TS38.101-1 Corrections on MSD for PC2 FDD band | ZTE Corporation, China Unicom | Revised |  |
| R4-2209181 |  | Consideration on practical PA implementation for NS\_05 A-MPR | Huawei, HiSilicon | Noted |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2211172 |  | WF on  A-MPR for NS\_05 | Huawei, HiSilicon | Approved |  |
| R4-2209180 | R4-2210701 | CR to TS38101-1 Update of PC2 A-MPR for NS\_05 | Huawei, HiSilicon | Postponed |  |
| R4-2208685 | R4-2210702 | CR to TS38.101-1 Corrections on MSD for PC2 FDD band | ZTE Corporation, China Unicom | Agreed |  |

**R4-2211172 WF on A-MPR for NS\_05**

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

**Decision: Approved.**

##### 5.1.8.1 UE RF requirements

**R4-2208685 CR to TS38.101-1: Corrections on MSD for PC2 FDD band**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1074 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation,China Unicom*

**Decision: Revised to R4-2210702 (from R4-2208685).**

**R4-2210702 CR to TS38.101-1: Corrections on MSD for PC2 FDD band**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1074 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation,China Unicom*

**Decision: Agreed.**

**R4-2209180 CR to TS38101-1 Update of PC2 A-MPR for NS\_05**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1088 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210701 (from R4-2209180).**

**R4-2210701 CR to TS38101-1 Update of PC2 A-MPR for NS\_05**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1088 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

**R4-2209181 Consideration on practical PA implementation for NS\_05 A-MPR**

*Type: discussion For: Agreement  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

#### 5.1.9 4Rx support for NR band n8

#### 5.1.10 Upper 700MHz A Block new E-UTRA band in US

**R4-2208646 CR to TS 38.101-1: Protection for band 103 from newly introduced CA combinations**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1070 rev Cat: F (Rel-17)  
  
 Source: Puloli*

**Abstract:**

To add protection for band 103 from newly introduced CA combinations, i.e., CA\_n41-n70 and CA\_n46-n48

**Decision: Revised to R4-2210716 (from R4-2208646).**

**R4-2210716 CR to TS 38.101-1: Protection for band 103 from newly introduced CA combinations**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1070 rev Cat: F (Rel-17)  
  
 Source: Puloli*

**Abstract:**

To add protection for band 103 from newly introduced CA combinations, i.e., CA\_n41-n70 and CA\_n46-n48

**Decision: Agreed.**

### 5.2 Rel-17 non-spectrum related WIs

#### 5.2.1 UE RF requirements for Transparent Tx Diversity (TxD) for NR

**[103-e][105] NR\_TxD\_maintenance, AI 5.2.1 – Ville Vintola**

**R4-2210241 Email discussion summary for [103-e][105] NR\_TxD\_maintenance**

*Type: other For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210441 (from R4-2210241).**

**R4-2210441 Email discussion summary for [103-e][105] NR\_TxD\_maintenance**

*Type: other For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210545 | WF on PC1.5 behavior in power class fall back | Apple | Based on subtopic 1-1. Consider adding option 5 from Samsung. |
| R4-2210546 | WF on PC1.5 handling for single port configuration in Rel-16 | Qualcomm | Based on subtopic 1-2. |
| R4-2210547 | CR on Receiver requirements for TX diversity | Apple |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2207662](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207662.zip) |  | Discussion on adding PC1.5 = TxD text | Qualcomm Incorporated | Noted |  |
| [R4-2208577](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208577.zip) | R4-2210704 | Update of TxD inband emissions | Rohde & Schwarz | Revised | Comments from ZTE. Need also confirmation from others if explanations are ok. Concerns seem mild so good change to agree 2nd round. |
| [R4-2208743](https://protect2.fireeye.com/v1/url?k=31323334-501d5122-313273af-454445555731-7443bc1c9cade18d&q=1&e=d58c7630-c782-45da-bb7b-e6b4fbb584d1&u=https%3A%2F%2Fapc01.safelinks.protection.outlook.com%2F%3Furl%3Dhttps%253A%252F%252Fwww.3gpp.org%252Fftp%252FTSG_RAN%252FWG4_Radio%252FTSGR4_103-e%252FDocs%252FR4-2208743.zip%26data%3D05%257C01%257Cxingjinqiang%2540oppo.com%257Cd14fdc123f3a45f89f8d08da27ea9f4b%257Cf1905eb1c35341c5951662b4a54b5ee6%257C0%257C0%257C637866186056290387%257CUnknown%257CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%253D%257C3000%257C%257C%257C%26sdata%3DxAJBPKkzdlk5sjbxoZ3eyfkpKLcijb6mf37hMaBonCY%253D%26reserved%3D0) |  | Definition of PC1.5 and applicability of extensions of power-class parameters (RRC) | Ericsson | Agreed | Cat-F |
| R4-2208744 |  | Definition of PC1.5 and applicability of extensions of power-class parameters (RRC) | Ericsson | Revised -> return to | This Cat-A but since discussion is not finished how to handle this in Rel-17, need to wait before submitting this CatA CR |
| [R4-2208842](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208842.zip) | R4-2210705 | CR to TS38.101-1 for the corrections on Tx Diversity Requirement | Samsung | Revised | Many comments. Need discussions. Up to proponent |
| [R4-2209034](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209034.zip) | R4-2210706 | Draft CR on SRS IL for NR TxD | ZTE Wistron Telecom AB | Revised | Will need to convert to real CR. |
| [R4-2209308](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209308.zip) |  | Discussion on TxD signaling and power class fallback | Apple | Noted |  |
| [R4-2209309](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209309.zip) |  | CR on new modifiedMPR-Behavior for power class fallback with Tx Diversity | Apple | Noted |  |
| [R4-2207991](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207991.zip) | R4-2210707 | Addition of MPR evaluation part to 38.837 | Skyworks Solutions Inc. | Revised | Editorial aspect |
| [R4-2208599](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208599.zip) |  | Revision of General part of MPR of 38.837 | vivo | Agreed |  |
| R4-2208600 |  | Big CR for supplementation of 38.837 | vivo | Withdrawn |  |
| [R4-2208745](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208745.zip) | R4-2210708 | Single-port fallback requirement for full-power UL-MIMO modes | Ericsson | Revised | Many comments to be addressed |
| [R4-2209422](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209422.zip) |  | CR to TR38.837 for TxD SRS IL | OPPO | Agreed |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210545 |  | WF on PC1.5 behavior in power class fall back | Apple | Noted |  |
| R4-2210546 |  | WF on PC1.5 handling for single port configuration in Rel-16 | Qualcomm | Approved |  |
| R4-2210547 |  | CR on Receiver requirements for TX diversity | Apple | Agreed |  |
| R4-2210704 |  | Update of TxD inband emissions | Rohde & Schwarz | Postponed |  |
| R4-2208744 |  | Definition of PC1.5 and applicability of extensions of power-class parameters (RRC) | Ericsson | Postponed | This cat A cr to the R4-2208743 is postponed Based on agreement in R4-2210546 |
| R4-2210705 |  | CR to TS38.101-1 for the corrections on Tx Diversity Requirement | Samsung | Postponed | Many comments. Need discussions. Up to proponent. Have further change to the first change. |
| R4-2210706 |  | Draft CR on SRS IL for NR TxD | ZTE Wistron Telecom AB | Postponed |  |
| R4-2210707 | R4-2211213 | Addition of MPR evaluation part to 38.837 | Skyworks Solutions Inc. | Agreed | Editorial aspect  Further revision to update tdoc number in the file |
| R4-2210708 |  | Single-port fallback requirement for full-power UL-MIMO modes | Ericsson | Agreed | Many comments to be addressed  Further revision to update tdoc number in the file |

**R4-2210545 WF on PC1.5 behavior in power class fall back**

*Type: other For: Approval  
 Source: Apple*

**Decision: Noted.**

**R4-2210546 WF on PC1.5 handling for single port configuration in Rel-16**

*Type: other For: Approval  
 Source: Qualcomm*

**Decision: Approved.**

**R4-2210547 CR on Receiver requirements for TX diversity**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1117 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Agreed.**

##### 5.2.1.1 General

**R4-2208599 Revision of General part of MPR of 38.837**

*Type: CR For: Agreement  
 38.837 v17.0.0 CR-0003 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Agreed.**

**R4-2208600 Big CR for supplementation of 38.837**

*Type: CR For: Agreement  
 38.837 v17.0.0 CR-0001 rev Cat: F (Rel-17)  
  
 Source: vivo*

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

##### 5.2.1.2 UE RF requirements

**R4-2207662 Discussion on adding PC1.5 = TxD text**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2207991 Addition of MPR evaluation part to 38.837**

*Type: CR For: Agreement  
 38.837 v17.0.0 CR-0002 rev Cat: F (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Addition of MPR evaluation sections after 4.4.1.2:

4.4.2 MPR evaluation for TxD

4.4.2.1 Architecture and Reverse IMD impact

4.4.2.2 Baseline architecture for different power classes

4.4.2.3 PC2 2Tx MPR measurement results and specification

4.4.2.4 1Tx fal

**Decision: Revised to R4-2210707 (from R4-2207991).**

**R4-2210707 Addition of MPR evaluation part to 38.837**

*Type: CR For: Agreement  
 38.837 v17.0.0 CR-0002 rev Cat: F (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Addition of MPR evaluation sections after 4.4.1.2:

4.4.2 MPR evaluation for TxD

4.4.2.1 Architecture and Reverse IMD impact

4.4.2.2 Baseline architecture for different power classes

4.4.2.3 PC2 2Tx MPR measurement results and specification

4.4.2.4 1Tx fal

**Decision: Revised to R4-2211213 (from R4-2210707).**

**R4-2211213 Addition of MPR evaluation part to 38.837**

*Type: CR For: Agreement  
 38.837 v17.0.0 CR-0002 rev Cat: F (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Addition of MPR evaluation sections after 4.4.1.2:

4.4.2 MPR evaluation for TxD

4.4.2.1 Architecture and Reverse IMD impact

4.4.2.2 Baseline architecture for different power classes

4.4.2.3 PC2 2Tx MPR measurement results and specification

4.4.2.4 1Tx fal

**Decision: Agreed.**

**R4-2208577 Update of TxD inband emissions**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1069 rev Cat: F (Rel-17)  
  
 Source: Rohde & Schwarz*

**Decision: Revised to R4-2210704 (from R4-2208577).**

**R4-2210704 Update of TxD inband emissions**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1069 rev Cat: F (Rel-17)  
  
 Source: Rohde & Schwarz*

**Decision: Postponed.**

**R4-2208745 Single-port fallback requirement for full-power UL-MIMO modes**

*Type: CR For: Agreement  
 38.837 v17.0.0 CR-0004 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

In this CR we provide a background to the fallback requirements for full-power UL-MIMO modes 0 and 2 (the latter w/o full-power TPMI)

**Decision: Revised to R4-2210708 (from R4-2208745).**

**R4-2210708 Single-port fallback requirement for full-power UL-MIMO modes**

*Type: CR For: Agreement  
 38.837 v17.0.0 CR-0004 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

In this CR we provide a background to the fallback requirements for full-power UL-MIMO modes 0 and 2 (the latter w/o full-power TPMI)

**Decision: Agreed.**

**R4-2208842 CR to TS38.101-1 for the corrections on Tx Diversity Requirement**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1079 rev Cat: F (Rel-17)  
  
 Source: Samsung*

**Decision: Revised to R4-2210705 (from R4-2208842).**

**R4-2210705 CR to TS38.101-1 for the corrections on Tx Diversity Requirement**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1079 rev Cat: F (Rel-17)  
  
 Source: Samsung*

**Decision: Postponed.**

**R4-2209034 Draft CR on SRS IL for NR TxD**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Decision: Revised to R4-2210706 (from R4-2209034).**

**R4-2210706 Draft CR on SRS IL for NR TxD**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Decision: Postponed.**

**R4-2209308 Discussion on TxD signaling and power class fallback**

*Type: discussion For: Decision  
 Source: Apple*

**Decision: Noted.**

**R4-2209309 CR on new modifiedMPR-Behavior for power class fallback with Tx Diversity**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1091 rev Cat: B (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2209422 CR to TR38.837 for TxD SRS IL**

*Type: CR For: Agreement  
 38.837 v17.0.0 CR-0005 rev Cat: F (Rel-17)  
  
 Source: OPPO*

**Decision: Agreed.**

##### 5.2.1.3 Release independency

#### 5.2.2 Support for Multi-SIM devices for LTE/NR

**[103-e][203] LTE\_NR\_MUSIM\_maintenance, AI 5.2.2 – Xusheng Wei**

**R4-2210275 Email discussion summary for [103-e][203] LTE\_NR\_MUSIM\_maintenance**

*Type: other For: Information  
 Source: Moderator (vivo)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210472 (from R4-2210275).**

**R4-2210472 Email discussion summary for [103-e][203] LTE\_NR\_MUSIM\_maintenance**

*Type: other For: Information  
 Source: Moderator (vivo)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210582 | WF on LTE\_NR\_MUSIM\_maintenance | vivo |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2209447 |  | Remaining issues for MUSIM | Ericsson | Noted |  |
| R4-2209448 | R4-2210986 | CR on new MGPs for MUSIM | Ericsson | Revised |  |
| R4-2209423 |  | Clarification on remaining issues for Rel-17 MUSIM | vivo | Noted |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210582 |  | WF on LTE\_NR\_MUSIM\_maintenance | vivo | Approved |  |
| R4-2210986 (revision of R4-2209448) |  | CR on new MGPs for MUSIM | Ericsson | Agreed |  |

**R4-2210582 WF on LTE\_NR\_MUSIM\_maintenance**

*Type: other For: Approval  
 Source: vivo*

**Decision: Approved.**

##### 5.2.2.1 RRM core requirements

**R4-2209423 Clarification on remaining issues for Rel-17 MUSIM**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2209447 New gap pattern for MUSIM**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the new MGPs for MUSIM

**Decision: Noted.**

**R4-2209448 CR on New gap pattern for MUSIM**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2375 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR updates the new MGPs for MUSIM

**Decision: Revised to R4-2210986 (from R4-2209448).**

**R4-2210986 CR on New gap pattern for MUSIM**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2375 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR updates the new MGPs for MUSIM

**Decision: Agreed.**

### 5.3 Other WIs and Rel-17 TEI

#### 5.3.1 BS RF requirements

#### 5.3.2 UE RF requirements

**[103-e][106] R17\_Maintenance, AI 5.3.2, 5.1.4, 5.1.5, 5.1.6, 5.1.9, 5.1.10 – Dominique Evereare**

**R4-2210242 Email discussion summary for [103-e][106] R17\_Maintenance**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210442 (from R4-2210242).**

**R4-2210442 Email discussion summary for [103-e][106] R17\_Maintenance**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207665 | R4-2210709 | CR 36101-h50 adding fallbacks | Apple | Revised | Is the work item code TEI17 correctly spelled on the work item code field? |
| R4-2207666 | R4-2210710 | CR 38101-1-h50 adding FR1 NR-CA fallbacks | Apple | Revised | Is the work item code TEI17 correctly spelled on the work item code field? |
| R4-2207667 | R4-2211185 | CR 38101-2-h50 adding fallbacks | Apple | Revised |  |
| R4-2207668 | R4-2210711 | CR 38101-3-h50 adding FR1+FR2 CA fallbacks | Apple | Revised | Is the work item code TEI17 correctly spelled on the work item code field? |
| R4-2207669 | R4-2210712 | CR 38101-3-h50 adding FR1 EN-DC fallbacks | Apple | Revised | Is the work item code TEI17 correctly spelled on the work item code field? |
| R4-2207670 | R4-2210713 | CR 38101-3-h50 adding EN-DC or NR-DC with FR2 fallbacks | Apple | Revised | Is the work item code TEI17 correctly spelled on the work item code field? |
| [R4-2208290](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208290.zip) | R4-2210714 | Draft CR for 36.101 Correction to Bands for NB-IoT in the USA | Dish Network | Revised |  |
| R4-2208291 |  | Draft CR for 36.101 Correction to Bands for NB-IoT in the USA | Dish Network | Return to | Cat A |
| R4-2208292 |  | Draft CR for 36.101 Correction to Bands for NB-IoT in the USA | Dish Network | Return to | Cat A |
| R4-2208293 |  | Draft CR for 36.101 Correction to Bands for NB-IoT in the USA | Dish Network | Return to | Cat A |
| [R4-2208404](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208404.zip) | R4-2210715 | Draft CR for 38.101-1- update signalling of maximum duty cycle for FR1 PC1 | CMCC | Revised | Is the work item code TEI17 correctly spelled on the work item code field?  What is the CR number? It reads (nothing) on the cover page but the Tdoc is reserved for CR number 5861. |
| [R4-2208405](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208405.zip) |  | CR for 36.101- add BCS 1 for band8 intra-band contiguous CA | CMCC | Return to |  |
| R4-2208433 |  | Summary on new request to Dual Connectivity (DC) of 5 bands LTE inter-band CA (5DL/1UL) and 1 NR band (1DL/1UL) | Samsung | Withdrawn |  |
| R4-2208646 | R4-2210716 | CR to TS 38.101-1: Protection for band 103 from newly introduced CA combinations | Puloli | Revised | What is the impacted specification? It reads 38.101 on the cover page but the Tdoc is reserved for 38.101-1.  What is the summary of change?  What are the consequences if not approved? |
| [R4-2208666](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208666.zip) | R4-2210717 | CR to TS38.101-1[R17] Some Corrections for Transmitter characteristics | ZTE Corporation | Revised | What is the impacted specification? It reads 38101-1 on the cover page but the Tdoc is reserved for 38.101-1  Is the work item code NR\_RF\_FR1\_enh-Core correctly spelled on the work item code field?  What is the CR number? It reads (nothing) on the cover page but the Tdoc is reserved for CR number 1071. |
| [R4-2208678](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208678.zip) | R4-2210718 | CR to TS38.101-1: Some corrections for the tables due to introduction of 35MHz\_45MHz CBW | ZTE Corporation, Skyworks Solutions Inc. | Revised | Is the work item code NR\_FR1\_35MHz\_45MHz\_BW-Core correctly spelled on the work item code field |
| R4-2208746 |  | Correction to additional spurious emission requirements for n48 | Ericsson | Agreed |  |
| R4-2209033 |  | DraftCR for TS 38.101-1 on correction on IL for SRS antenna switching | ZTE Wistron Telecom AB | Withdrawn |  |
| R4-2209037 |  | Draft CR for TS 38.307 on Annex B | ZTE Wistron Telecom AB | Not pursued |  |
| R4-2209054 |  | DraftCR for TS 38.101-1 on correction on IL for SRS antenna switching | ZTE Wistron Telecom AB | Agreed |  |
| R4-2209109 |  | LTE CA corrections R17 | Nokia | Agreed |  |
| R4-2209316 |  | CR for TS 38.101-3 Rel-17: Corrections on band combinations for UE co-existence | Apple | Agreed |  |
| R4-2209317 | R4-2210719 | CR for TS 38.101-1 Rel-17: Corrections on band combinations for UE co-existence | Apple | Revised | What is the current version? It reads 17.15.0 on the cover page but the Tdoc is reserved for version 17.5.0. |
| R4-2209318 |  | CR for TS 36.101 Rel-17: Corrections on band combinations for UE co-existence | Apple | Agreed |  |
| [R4-2209346](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209346.zip) |  | Draft CR for 36.101 to clarify the definition about con-current operation (R14) | Huawei, HiSilicon | Not pursued |  |
| R4-2209347 |  | Draft CR for 36.101 to clarify the definition about con-current operation (R15) | Huawei, HiSilicon | Withdrawn | Cat A |
| R4-2209348 |  | Draft CR for 36.101 to clarify the definition about con-current operation (R16) | Huawei, HiSilicon | Withdrawn | Cat A |
| R4-2209349 |  | Draft CR for 36.101 to clarify the definition about con-current operation (R17) | Huawei, HiSilicon | Withdrawn | Cat A |
| [R4-2209354](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209354.zip) |  | CR for 38.101-1 to change table 7.3.2-1 to clause 7.3.2 for general REFSENS  (R17) | Huawei, HiSilicon | Merged  in the revision of R4-2208678 |  |
| R4-2209616 | R4-2210720 | CR to TR 38.862 on cleanup clauses | ZTE Corporation | Revised | What does the proposed change affect? UICC? ME? Radio Access Network? Core Network? |
| R4-2210217 |  | Correction of MPE Duty Cycle Parameter Name | Lenovo | Not pursued | What is the current version? It reads V17.5.0 on the cover page but the Tdoc is reserved for version 17.5.0. |
| R4-2210227 | R4-2210721 | CR to R16 TS38.101-1 on transient period capability | Skyworks, Qualcomm | Revised | What does the proposed change affect? UICC? ME? Radio Access Network? Core Network? |
| R4-2210229 | R4-2210722 | CR to R17 TS38.101-1 on transient period capability | Skyworks, Qualcomm | Revised | What does the proposed change affect? UICC? ME? Radio Access Network? Core Network? |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210709 |  | CR 36101-h50 adding fallbacks | Apple | Agreed |  |
| R4-2210710 |  | CR 38101-1-h50 adding FR1 NR-CA fallbacks | Apple | Agreed |  |
| R4-2211185 |  | CR 38101-2-h50 adding fallbacks | Apple | Agreed |  |
| R4-2210711 |  | CR 38101-3-h50 adding FR1+FR2 CA fallbacks | Apple | Agreed |  |
| R4-2210712 |  | CR 38101-3-h50 adding FR1 EN-DC fallbacks | Apple | Agreed |  |
| R4-2210713 |  | CR 38101-3-h50 adding EN-DC or NR-DC with FR2 fallbacks | Apple | Agreed |  |
| R4-2210714 |  | Draft CR for 36.101 Correction to Bands for NB-IoT in the USA | Dish Network | Endorsed |  |
| R4-2208291 |  | Draft CR for 36.101 Correction to Bands for NB-IoT in the USA | Dish Network | Endorsed | Cat A |
| R4-2208292 |  | Draft CR for 36.101 Correction to Bands for NB-IoT in the USA | Dish Network | Endorsed | Cat A |
| R4-2208293 |  | Draft CR for 36.101 Correction to Bands for NB-IoT in the USA | Dish Network | Endorsed | Cat A |
| R4-2210715 |  | Draft CR for 38.101-1- update signalling of maximum duty cycle for FR1 PC1 | CMCC | Endorsed |  |
| [R4-2208405](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208405.zip) |  | CR for 36.101- add BCS 1 for band8 intra-band contiguous CA | CMCC | Not pursued |  |
| R4-2210716 |  | CR to TS 38.101-1: Protection for band 103 from newly introduced CA combinations | Puloli | Agreed |  |
| R4-2210717 |  | CR to TS38.101-1[R17] Some Corrections for Transmitter characteristics | ZTE Corporation | Agreed |  |
| R4-2210718 |  | CR to TS38.101-1: Some corrections for the tables due to introduction of 35MHz\_45MHz CBW | ZTE Corporation, Skyworks Solutions Inc. | Agreed |  |
| R4-2209317 |  | CR for TS 38.101-1 Rel-17: Corrections on band combinations for UE co-existence | Apple | 9317 agreed  R4-2210719 withdrawn |  |
| R4-2210720 |  | CR to TR 38.862 on cleanup clauses | ZTE Corporation | Agreed |  |
| R4-2210721 |  | CR to R16 TS38.101-1 on transient period capability | Skyworks, Qualcomm | Agreed |  |
| R4-2210722 |  | CR to R17 TS38.101-1 on transient period capability | Skyworks, Qualcomm | Agreed |  |

-----------------------------------------------------------------------------------------------------------------------------------

**R4-2207665 CR 36101-h50 adding fallbacks**

*Type: CR For: Agreement  
 36.101 v17.5.0 CR-5860 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Abstract:**

CR adding missing fallbacks and doing bug fixing

**Decision: Revised to R4-2210709 (from R4-2207665).**

**R4-2210709 CR 36101-h50 adding fallbacks**

*Type: CR For: Agreement  
 36.101 v17.5.0 CR-5860 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Abstract:**

CR adding missing fallbacks and doing bug fixing

**Decision: Agreed.**

**R4-2207666 CR 38101-1-h50 adding FR1 NR-CA fallbacks**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1050 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Abstract:**

CR adding missing fallbacks and doing bug fixing

**Decision: Revised to R4-2210710 (from R4-2207666).**

**R4-2210710 CR 38101-1-h50 adding FR1 NR-CA fallbacks**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1050 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Abstract:**

CR adding missing fallbacks and doing bug fixing

**Decision: Agreed.**

**R4-2207667 CR 38101-2-h50 adding fallbacks**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0452 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Abstract:**

CR adding missing fallbacks and doing bug fixing

**Decision: Revised to R4-2211185 (from R4-2207667).**

**R4-2211185 CR 38101-2-h50 adding fallbacks**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0452 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Abstract:**

CR adding missing fallbacks and doing bug fixing

**Decision: Agreed.**

**R4-2207668 CR 38101-3-h50 adding FR1+FR2 CA fallbacks**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0706 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Abstract:**

CR adding missing fallbacks and doing bug fixing

**Decision: Revised to R4-2210711 (from R4-2207668).**

**R4-2210711 CR 38101-3-h50 adding FR1+FR2 CA fallbacks**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0706 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Abstract:**

CR adding missing fallbacks and doing bug fixing

**Decision: Agreed.**

**R4-2207669 CR 38101-3-h50 adding FR1 EN-DC fallbacks**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0707 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Abstract:**

CR adding missing fallbacks and doing bug fixing

**Decision: Revised to R4-2210712 (from R4-2207669).**

**R4-2210712 CR 38101-3-h50 adding FR1 EN-DC fallbacks**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0707 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Abstract:**

CR adding missing fallbacks and doing bug fixing

**Decision: Agreed.**

**R4-2207670 CR 38101-3-h50 adding EN-DC or NR-DC with FR2 fallbacks**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0708 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Abstract:**

CR adding missing fallbacks and doing bug fixing

**Decision: Revised to R4-2210713 (from R4-2207670).**

**R4-2210713 CR 38101-3-h50 adding EN-DC or NR-DC with FR2 fallbacks**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0708 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Abstract:**

CR adding missing fallbacks and doing bug fixing

**Decision: Agreed.**

**R4-2208290 Draft CR for 36.101 Correction to Bands for NB-IoT in the USA**

*Type: draftCR For: (not specified)  
 36.101 v14.22.0 CR- rev Cat: F (Rel-14)  
  
 Source: Dish Network*

**Decision: Revised to R4-2210714 (from R4-2208290).**

**R4-2210714 Draft CR for 36.101 Correction to Bands for NB-IoT in the USA**

*Type: draftCR For: (not specified)  
 36.101 v14.22.0 CR- rev Cat: F (Rel-14)  
  
 Source: Dish Network*

**Decision: Endorsed.**

**R4-2208291 Draft CR for 36.101 Correction to Bands for NB-IoT in the USA**

*Type: draftCR For: (not specified)  
 36.101 v15.18.0 CR- rev Cat: A (Rel-15)  
  
 Source: Dish Network*

**Decision: Endorsed.**

**R4-2208292 Draft CR for 36.101 Correction to Bands for NB-IoT in the USA**

*Type: draftCR For: (not specified)  
 36.101 v16.13.0 CR- rev Cat: A (Rel-16)  
  
 Source: Dish Network*

**Decision: Endorsed.**

**R4-2208293 Draft CR for 36.101 Correction to Bands for NB-IoT in the USA**

*Type: draftCR For: (not specified)  
 36.101 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Dish Network*

**Decision: Endorsed.**

**R4-2208404 Draft CR for 38.101-1- update signalling of maximum duty cycle for FR1 PC1**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Revised to R4-2210715 (from R4-2208404).**

**R4-2210715 Draft CR for 38.101-1- update signalling of maximum duty cycle for FR1 PC1**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Endorsed.**

**R4-2208405 CR for 36.101- add BCS 1 for band8 intra-band contiguous CA**

*Type: CR For: Approval  
 36.101 v17.5.0 CR-5861 rev Cat: B (Rel-17)  
  
 Source: CMCC*

**Decision: Not pursued.**

**R4-2208666 CR to TS38.101-1[R17] Some Corrections for Transmitter characteristics**

*Type: CR For: Endorsement  
 38.101-1 v17.5.0 CR-1071 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2210717 (from R4-2208666).**

**R4-2210717 CR to TS38.101-1[R17] Some Corrections for Transmitter characteristics**

*Type: CR For: Endorsement  
 38.101-1 v17.5.0 CR-1071 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

**R4-2208678 CR to TS38.101-1: Some corrections for the tables due to introduction of 35MHz\_45MHz CBW**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1072 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation, Skyworks Solutions Inc.*

**Decision: Revised to R4-2210718 (from R4-2208678).**

**R4-2210718 CR to TS38.101-1: Some corrections for the tables due to introduction of 35MHz\_45MHz CBW**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1072 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation, Skyworks Solutions Inc.*

**Decision: Agreed.**

**R4-2208746 Correction to additional spurious emission requirements for n48**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1077 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR to correct the additional spurious emission requirement for n48 (30 MHz bandwidth)

**Decision: Agreed.**

**R4-2209033 DraftCR for TS 38.101-1 on correction on IL for SRS antenna switching**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: ZTE Wistron Telecom AB*

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

**R4-2209037 Draft CR for TS 38.307 on Annex B**

*Type: draftCR For: Endorsement  
 38.307 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: ZTE Wistron Telecom AB*

**Decision: Not pursued.**

**R4-2209054 DraftCR for TS 38.101-1 on correction on IL for SRS antenna switching**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: ZTE Wistron Telecom AB*

**Decision: Agreed.**

**R4-2209109 LTE CA corrections R17**

*Type: CR For: Agreement  
 36.101 v17.5.0 CR-5867 rev Cat: F (Rel-17)  
  
 Source: Nokia*

**Decision: Agreed.**

**R4-2209316 CR for TS 38.101-3 Rel-17: Corrections on band combinations for UE co-existence**

*Type: CR For: Approval  
 38.101-3 v17.5.0 CR-0722 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2209317 CR for TS 38.101-1 Rel-17: Corrections on band combinations for UE co-existence**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1092 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2210719 CR for TS 38.101-1 Rel-17: Corrections on band combinations for UE co-existence**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1092 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2209318 CR for TS 36.101 Rel-17: Corrections on band combinations for UE co-existence**

*Type: CR For: Approval  
 36.101 v17.5.0 CR-5869 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2209346 Draft CR for 36.101 to clarify the definition about con-current operation (R14)**

*Type: draftCR For: Endorsement  
 36.101 v14.22.0 CR- rev Cat: (Rel-14)  
  
 Source: Huawei, HiSilicon*

**Decision: Not pursued.**

**R4-2209347 Draft CR for 36.101 to clarify the definition about con-current operation (R15)**

*Type: draftCR For: Endorsement  
 36.101 v15.18.0 CR- rev Cat: (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2209348 Draft CR for 36.101 to clarify the definition about con-current operation (R16)**

*Type: draftCR For: Endorsement  
 36.101 v16.13.0 CR- rev Cat: (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2209349 Draft CR for 36.101 to clarify the definition about con-current operation (R17)**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2209354 CR for 38.101-1 to change table 7.3.2-1 to clause 7.3.2 for general REFSENS (R17)**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1093 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged (with revision of R4-2208678).**

**R4-2210217 Correction of MPE Duty Cycle Parameter Name**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1114 rev Cat: F (Rel-17)  
  
 Source: Lenovo*

**Decision: Not pursued.**

**R4-2210227 CR to R16 TS38.101-1 on transient period capability**

*Type: CR For: Agreement  
 38.101-1 v16.11.0 CR-1115 rev Cat: F (Rel-16)  
  
 Source: Skyworks Solutions Inc., Qualcomm Incorporated*

**Decision: Revised to R4-2210721 (from R4-2210227).**

**R4-2210721 CR to R16 TS38.101-1 on transient period capability**

*Type: CR For: Agreement  
 38.101-1 v16.11.0 CR-1115 rev Cat: F (Rel-16)  
  
 Source: Skyworks Solutions Inc., Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2210229 CR to R17 TS38.101-1 on transient period capability**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1116 rev Cat: A (Rel-17)  
  
 Source: Skyworks Solutions Inc., Qualcomm Incorporated.*

**Decision: Revised to R4-2210722 (from R4-2210229).**

**R4-2210722 CR to R17 TS38.101-1 on transient period capability**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1116 rev Cat: A (Rel-17)  
  
 Source: Skyworks Solutions Inc., Qualcomm Incorporated.*

**Decision: Agreed.**

#### 5.3.3 RRM requirements

**[103-e][202] Maintenance\_R17\_RRM, AI 5.3.3 – Yang Tang**

**R4-2210274 Email discussion summary [103-e][202] Maintenance\_R17\_RRM**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210471 (from R4-2210274).**

**R4-2210471 Email discussion summary [103-e][202] Maintenance\_R17\_RRM**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2211169 | WF about the cell selection initiation for Idle mode | Ericsson | AI 5.3.3 |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2209243](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209243.zip) | R4-2210984 | CR on mapping table for NR TADV [NRTADV] | Huawei, Hisilicon | Revised |  |
| [R4-2210187](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210187.zip) |  | Timing advance (TADV) measurement report mapping in TS 38.133 | Ericsson, NTT DOCOMO | Merged  with [**R4-2209243**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209243.zip) |  |
| [R4-2209454](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209454.zip) |  | CR on cell reselection in Idle mode | Ericsson | Return to |  |
| [R4-2209455](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209455.zip) |  | CR on cell selection in Idle mode for NR-U | Ericsson | Return to |  |
| [R4-2210123](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210123.zip) |  | Draft CR on number of carriers to support for NR SA in Rel-17 | Ericsson | Return to |  |
| [R4-2207641](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207641.zip) | R4-2210985 | Correction of Configuration Parameters for Test 1 in Test Case A.7.1.11 | STMicroelectronics | Revised | Cat.A CR up to [Rel-13] are needed upon the approval of R17 CR. |
| R4-2210186 | R4-2211167 | On timing advance (TADV) measurement report mapping | Ericsson | Revised | LS out |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2211169 |  | WF about the cell selection initiation for Idle mode | Ericsson | Approved |  |
| R4-2211167 (revision of R4-2210186) |  | On timing advance (TADV) measurement report mapping | Ericsson | Approved | LS out |
| R4-2210984 (revision of [R4-2209243](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209243.zip)) |  | CR on mapping table for NR TADV [NRTADV] | Huawei, Hisilicon, Ericsosn | Agreed | Add Ericsson as co-sourcing |
| [R4-2209454](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209454.zip) |  | CR on cell reselection in Idle mode | Ericsson | Not pursued |  |
| [R4-2209455](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209455.zip) |  | CR on cell selection in Idle mode for NR-U | Ericsson | Not pursued |  |
| [R4-2210123](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210123.zip) |  | Draft CR on number of carriers to support for NR SA in Rel-17 | Ericsson | Not pursued |  |
| R4-2210985 (revision of [R4-2207641](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207641.zip)) |  | Correction of Configuration Parameters for Test 1 in Test Case A.7.1.11 | STMicroelectronics | Agreed | Please come back with CRs for other release in future meeting |

**R4-2211169 WF about the cell selection initiation for Idle mode**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Approved.**

------------------------------------------------------------------------------------------------------------------------

**R4-2207641 Correction of Configuration Parameters for Test 1 in Test Case A.7.1.11**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7148 rev Cat: F (Rel-17)  
  
 Source: STMicroelectronics*

**Abstract:**

In Test case A.7.1.11 Test 1, the UE is configured with SRS transmission with periodicity of 2ms. Since the UE is operating in a half-duplex mode, class B, the UE requires an unoccupied subframe between receive and transmit. A continuous uplink activity (

**Decision: Revised to R4-2210985 (from R4-2207641).**

**R4-2210985 Correction of Configuration Parameters for Test 1 in Test Case A.7.1.11**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7148 rev Cat: F (Rel-17)  
  
 Source: STMicroelectronics*

**Abstract:**

In Test case A.7.1.11 Test 1, the UE is configured with SRS transmission with periodicity of 2ms. Since the UE is operating in a half-duplex mode, class B, the UE requires an unoccupied subframe between receive and transmit. A continuous uplink activity (

**Decision: Agreed.**

**R4-2209242 Discussion on mapping table for NR TADV**

*Type: LS out For: Approval  
 to RAN1, RAN3  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209243 CR on mapping table for NR TADV [NRTADV]**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2370 rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210984 (from R4-2209243).**

**R4-2210984 CR on mapping table for NR TADV [NRTADV]**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2370 rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

**R4-2209453 Remaining issue for Idle mode**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the remaining issues for Idle mode

**Decision: Noted.**

**R4-2209454 CR on cell reselection in Idle mode**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2377 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This draft CR captures cell reselection in Idle mode

**Decision: Not pursued.**

**R4-2209455 CR on cell selection in Idle mode for NR-U**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2378 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This draft CR updates the timer to initiate the cell selection in NR-U Idle mode

**Decision: Not pursued.**

**R4-2210122 Discussion on number of carriers for NR SA in Rel-17**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss number of carrier support for NR SA in rel-17

**Decision: Noted.**

**R4-2210123 Draft CR on number of carriers to support for NR SA in Rel-17**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2391 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

In this contribution we provide CR to update number of carrier support for NR SA in rel-17

**Decision: Not pursued.**

**R4-2210186 On timing advance (TADV) measurement report mapping**

*Type: LS out For: Approval  
 to RAN3, cc RAN1, RAN2  
 Source: Ericsson*

**Abstract:**

The paper analyzes the timing advance (TADV) measurement report mapping for timing advance (TADV) measurement specified in Clause 5.2.7 of TS 38.215 as TEI17 as part of E-CID measurement. LS needs to be sent to RAN3 to define the NRPPa signaling between g

**Decision: Revised to R4-2211167 (from R4-2210186).**

**R4-2211167 On timing advance (TADV) measurement report mapping**

*Type: LS out For: Approval  
 to RAN3, cc RAN1, RAN2  
 Source: Ericsson*

**Abstract:**

The paper analyzes the timing advance (TADV) measurement report mapping for timing advance (TADV) measurement specified in Clause 5.2.7 of TS 38.215 as TEI17 as part of E-CID measurement. LS needs to be sent to RAN3 to define the NRPPa signaling between g

**Decision: Approved.**

**R4-2210187 Timing advance (TADV) measurement report mapping in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2403 rev Cat: B (Rel-17)  
  
 Source: Ericsson, NTT DOCOMO*

**Abstract:**

To define timing advance (TADV) measurement report mapping for timing advance (TADV) measurement specified by RAN1 in Clause 5.2.7 of TS 38.215 as TEI17.

**Decision: Merged (with R4-2209243).**

#### 5.3.4 Demodulation and CSI requirements

#### 5.3.5 Rel-17 TEI

##### 5.3.5.1 Incorrect PMI reporting

##### 5.3.5.2 Canada band n77

**R4-2208747 Extension of operation in the n77 frequency range in Canada**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1078 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR to introduce a capability and corresponding NS value for extended n77 operation in Canada

**Decision: Revised to R4-2210816 (from R4-2208747).**

**R4-2210816 Extension of operation in the n77 frequency range in Canada**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1078 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR to introduce a capability and corresponding NS value for extended n77 operation in Canada

**Decision: Postponed.**

**R4-2208867 Discussion on band n77 issue**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2209108 n77 Canada**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1084 rev Cat: B (Rel-17)  
  
 Source: Nokia*

**Decision: Not pursued.**

**R4-2209638 Extended frequency range 3650-3980 MHz in Canada band n77**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1106 rev Cat: B (Rel-17)  
  
 Source: Mediatek India Technology Pvt.*

**Decision: Not pursued.**

## 6 LS response to ITU

### 6.1 Generic unwanted emission (IMT-2020)

### 6.2 Test methods for OTA total radiated power

## 7 Rel-17 feature list

**[103-e][136] R17\_feature\_list, AI 7 – Xiaoran Zhang**

**R4-2210271 Email discussion summary for [103-e][136] R17\_feature\_list**

*Type: other For: Information  
 Source: Moderator (CMCC)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210468 (from R4-2210271).**

**R4-2210468 Email discussion summary for [103-e][136] R17\_feature\_list**

*Type: other For: Information  
 Source: Moderator (CMCC)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210436 | Rel-17 RAN4 UE feature list for NR | CMCC | Approved |  |
| R4-2210437 | LS on Rel-17 RAN4 UE feature list for NR | CMCC | Approved | To: RAN2, Cc: RAN1 |

**R4-2210436 Rel-17 RAN4 UE feature list for NR**

*Type: other For: Approval  
 Source: CMCC*

**Decision: Approved.**

**R4-2210437 LS on Rel-17 RAN4 UE feature list for NR**

*Type: LSout For: Approval  
 Source: CMCC*

**Decision: Approved.**

**Conclusions after 2nd round**

**New tdocs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Status** | **Comments** |
| R4-2211189 | Rel-17 RAN4 UE feature list for NR | CMCC | Approved |  |
| R4-2211190 | LS on Rel-17 RAN4 UE feature list for NR | CMCC | Approved | To: RAN2, Cc: RAN1 |

**R4-2211189 Rel-17 RAN4 UE feature list for NR**

*Type: other For: Approval  
 Source: CMCC*

**Decision: Approved.**

**R4-2211190 LS on Rel-17 RAN4 UE feature list for NR**

*Type: LSout For: Approval  
 Source: CMCC*

**Decision: Approved.**

**GTW on May-13**

**16. NR\_RF\_FR1\_enh**

**FG 16-7 and 16-8**

**Discussions:**

Qualcomm: where is 16-8 disccused and what is the rationale?

Huawei/Samsung: it was discussed in [122] [124]. (for high power limit)

Apple: support

Ericssion: it is important to inform network that UE can maintain the power especially for TxD. It is not good to reuse TxD indication.

OPPO: agree with Ericsson. The power class ambiguity exists since Rel-16. We have the similar situation as we did for EN-DC. If possible, we can consider to implement this from Rel-16.

Vivo: share the similar view as other companies. This capability can resolve issues for power class. It is helpful to network.

Qualcomm: How is the increasing total power related to this? This is for output power. Here TxD is not pre-requisite for this.

Skyworks: Share the same comment as the pre-requisite question.

Ericsson: PC1.5 have the same issue. It is not required to report TxD. This is general problem.

Huawei: it can address 23+26. For inter-band CA, only one band can implements power class 2. Without this capability, network does not know which band is PC2.

ZTE: Is this capability static or dynamic? 23+26 architecture, if both bands are PC2 capable, it can be swapped. The capability is not fixed. One band can work in uplink MIMO. If the non-MIMO mode is different from MIMO mode, this capability cannot handle it.

China Telecom: from my thread, [122], there are more than ten companies to support this capability. That is the background. From our view, this capability is not conflict with capability of high power limit. They can be discussed separately.

Qualcomm: to Huawei, this is that we should avoid. 23+26 should not be allowed. This is not Tx diversity. It can be easily solved by supporting 26+26.

Huawei: 23+26 implementation is valid. For this kind of UE implementation, if UE can support 26 for both bands under discussion, I do not see the reason why it is not allowed to report PC2.

Skyworks: disagree with Qualcomm. You can support PC2 for two bands of n77 and n79 with one PA. You could also support CA. This is valid implementation. There is ambiguity.

Qualcomm: I assume 23+26. For this case, UE can announce PC3 for one band and PC2 for the others.

Samsung: We agree with Huawei. 23+26 is valid. 26 is the main PA. The other PA is used for CA. The power ambiguity exists for non-TxD case.

Skyworks: We do not have one PA for one band rather one PA for multiple bands. For CA, additional PA would be needed. We support capability even without TxD pre-requisite.

Qualcomm: Qualcomm does not agree this capability because it will allow UE to arbitrarily down-grade the power for CA.

Intel: agree with Qualcomm.

Qualcomm: add the note: UE is not allowed to report lower power class in CA mode.

Apple: how can it work for PC1.5.

Mediatek: Agree with Huawei and Apple.

**Agreement:** Further discuss the pre-requisite for the feature group in this meeting.

* Consider the comment that t is not applicable to the case when UL-MIMO and UL CA are in operation at the same time.

**Issue 2-2: Tx Diversity: FG X-1**

**Agreement:**

Do not introduce TXD support per band per band combination

**21. NR\_PC2\_UE\_FDD**

Chair => both [21-1] and [21-2] are allowed for further discussion in the 2nd round.

**Topic 6-2: Per BC indication for the per-FR gap capability**

3 companies support this feature, while Apple suggest to have some threshold specified, i.e. only for band combinations where the supported number of CCs in a FR exceeds the threshold, it is allowed to indicate per-FR gaps per BC

Recommended WF: Discuss the following proposal in GTW.

Keep the original per UE based per-FR measurement gap capability (advertised in IE of independentGapConfig) and add a new per BC based per-FR measurement gap capacity indication to Rel-17 UE feature list.

**Discussions:**

Apple: only UE supporting high order CA may run into some trouble when using the original per UE capability. Other UEs have no problem. We can consider this capability with this restriction. RAN4 should look at the RRM requirements.

Verizon: support per-BC per FR gap because we want to consider our high order CA. This capability is important.

Qualcomm: setting the threshold is difficult. It did not disturb any legacy UE.

Huawei: Regarding Apple concern, it has been discussed since Rel-16. It is difficult to set such value. If UE does not support high order CA, UE can still use the legacy capability.

Apple: this is problem for some UE and not for all the UE. It is difficult to quantify the impact. It is unfair to UE with good implementation. I don’t see the complexity for gNB.

Qualcomm: this was discussed since a long time. We provided paper with analysis. What is the downside to introduce this? We do not down-grade any. We still keep the old capability. If UE has advantage, UE can use this feature.

Apple: the things are complicated. Do we expect UE indicates capability when UE only supports 12 CCs which is much lower than upper limit of CCs?

--------------------------------------------------------------------------------------------------------------------

**R4-2207785 Further discussion on R17 feature list**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2207955 A new Rel-17 per-FR MG capability based on Per BC**

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

**Decision: Noted.**

**R4-2208051 Discussion on Rel-17 RAN4 UE feature list**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208304 Regarding UE feature and capability for 1024QAM**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2208768 Discussion on Rel-17 feature list**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2209258 On Rel.17 RAN4 Features**

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

**Decision: Noted.**

**R4-2209375 R17 Per band Per BC power class capability**

*Type: discussion For: Approval  
 Source: OPPO*

**Decision: Noted.**

**R4-2210200 Rel-17 feature group for increasing MOP of CA and DC**

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

**Decision: Noted.**

## 8 Rel-17 spectrum related WIs for NR

**[103-e][204] Spectrum\_RRM, AI 8, 10, 10.6, 8.2.3 – Muhammad Kazmi**

**R4-2210276 Email discussion summary for [103-e][204] Spectrum\_RRM**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210473 (from R4-2210276).**

**R4-2210473 Email discussion summary for [103-e][204] Spectrum\_RRM**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2208893](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208893.zip) | R4-2210987 | CR to TS 38.133 - Introduction of licensed 6GHz band n104 | Ericsson | Revised | Updated based on RF agreement on REFSENS |
| [R4-2208901](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208901.zip) | R4-2210988 | CR to TS 38.133: RMR 900MHz band introduction | Ericsson | Revised | Editorial updates |
| [R4-2209675](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209675.zip) |  | Draft CR to TS 38.133: implementation of RMR900 band n100, Rel-17 | Huawei, HiSilicon | Not pursued |  |
| [R4-2209470](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209470.zip) | R4-2210989 | CR on adding B48 for M1/M2/NB1/NB2 | Ericsson | Revised | R4-2209470 is draft CR. It should be revised to CR i.e. with CR number |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210987 (revision of [R4-2208893](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208893.zip)) |  | CR to TS 38.133 - Introduction of licensed 6GHz band n104 | Ericsson | Agreed | Related UE RF CR in R4-2210742 under [207] is under discussion |
| R4-2210988 (revision of [R4-2208901](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208901.zip)) |  | CR to TS 38.133: RMR 900MHz band introduction | Ericsson | Agreed | Editorial updates |
| R4-2210989 |  | CR on adding B48 for M1/M2/NB1/NB2 | Ericsson | Agreed |  |

### 8.1 Introduction of 6GHz NR licensed bands

**[103-e][114] NR\_6 GHz\_licensed, AI 8.1 – Liehai Liu**

**R4-2210249 Email discussion summary for [103-e][114] NR\_6 GHz\_licensed**

*Type: other For: Information  
 Source: Moderator (Huawei, HiSilicon)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210449 (from R4-2210249).**

**R4-2210449 Email discussion summary for [103-e][114] NR\_6 GHz\_licensed**

*Type: other For: Information  
 Source: Moderator (Huawei, HiSilicon)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210553 | Reply LS on request information on progress and timeline relating to 6 GHz NR licensed bands | Huawei | To: GSMA Spectrum Team; Cc: RAN |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207664 |  | On UE Rx requirements for the licensed operation in the upper 6GHz frequency range | Apple | Noted |  |
| R4-2207921 |  | Proposals on BS RF requirements for introduction of 6GHz licensed band | Nokia, Nokia Shanghai Bell | Noted |  |
| R4-2207922 |  | CR to TR 38.176-1 on introduction of 6GHz licensed band | Nokia, Nokia Shanghai Bell | Agreed | To be agreed together with other CRs for the WI at 2nd round |
| R4-2208196 |  | System parameters for 6GHz licensed band | CATT | Noted |  |
| R4-2208242 |  | Remaining issue for BS RF requriement in 6GHz band | CATT | Noted |  |
| R4-2208243 |  | Introducing 6GHz licensed operation into 38.141-1 | CATT | Not Pursued |  |
| R4-2208244 | R4-2210739 | Introducing 6GHz licensed operation into 37.105 | CATT | Revised |  |
| R4-2208245 |  | Introducing 6GHz licensed operation into 38.174 | CATT | Return to | To be agreed together with other CRs for the WI at 2nd round |
| R4-2208340 |  | Discussion on UE REFSENS for 6GHz licensed band | Mediatek India Technology Pvt. | Noted |  |
| R4-2208407 |  | Discussion on system parameters for 6GHz licensed spectrum | CMCC | Noted |  |
| R4-2208408 |  | Discussion on UE requirements for 6GHz licensed spectrum | CMCC | Noted |  |
| R4-2208409 |  | Discussion on BS requirements for 6GHz licensed spectrum | CMCC | Noted |  |
| R4-2208547 |  | System parameters for 6GHz NR licensed band | Huawei, HiSilicon, China Unicom | Noted |  |
| R4-2208548 |  | Remaining issues on UE TX RF requirements | Huawei, HiSilicon, China Unicom | Noted |  |
| R4-2208549 |  | Remaining issues on UE RX RF requirements | Huawei, HiSilicon, China Unicom | Noted |  |
| R4-2208550 |  | Remaining issues on BS RF requirements | Huawei, HiSilicon, China Unicom | Noted |  |
| R4-2208551 |  | Measurement uncertainty for 6 to 7.125GHz | Huawei, HiSilicon | Noted |  |
| R4-2208552 |  | CR on introduction of 6GHz licensed band for 37.145-1 | Huawei, HiSilicon | Return to | To be agreed together with other CRs for the WI at 2nd round |
| R4-2208553 |  | CR on introduction of 6GHz licensed band for 37.145-2 | Huawei, HiSilicon | Return to | To be agreed together with other CRs for the WI at 2nd round |
| R4-2208655 |  | System Parameters of n104 | Nokia, Nokia Shanghai Bell | Noted |  |
| R4-2208860 |  | Discussion the remaining issues on system parameters for 6G license band | Xiaomi | Noted |  |
| R4-2208861 |  | REFSENs for 6G license band | Xiaomi | Noted |  |
| R4-2208890 |  | Licensed 6GHz: General aspects - system parameters | Ericsson | Noted |  |
| R4-2208891 |  | Licensed 6GHz: Remaining UE RF open issues | Ericsson | Noted |  |
| R4-2208892 |  | Licensed 6GHz: Remaining BS RF open issues | Ericsson | Noted |  |
| R4-2208894 |  | CR to TS 38.141-2 - Introduction of licensed 6GHz band n104 | Ericsson | Not Pursued |  |
| R4-2208895 |  | CR to TS 38.176-2 - Introduction of licensed 6GHz band n104 | Ericsson | Return to | To be agreed together with other CRs for the WI at 2nd round |
| R4-2209537 |  | CR to 37.104 on introduction of n104 co-existence requirements | Nokia, Nokia Shanghai Bell | Return to | To be agreed together with other CRs for the WI at 2nd round |
| R4-2209538 |  | CR to 37.141 on introduction of n104 co-existence requirements | Nokia, Nokia Shanghai Bell | Return to | To be agreed together with other CRs for the WI at 2nd round |
| R4-2209579 |  | Discussion on system parameters for 6425-7125MHz | ZTE Corporation | Noted |  |
| R4-2209580 |  | Discussion on UE RF requirements for 6425-7125MHz | ZTE Corporation | Noted |  |
| R4-2209581 |  | Discussion on BS RF requirements for 6425-7125MHz | ZTE Corporation | Noted |  |
| R4-2209582 | R4-2210740 | CR to TS38.104 the introduction of 6425-7125MHz | ZTE Corporation | Revised |  |
| R4-2209583 |  | CR to TS36.104 the introduction of coexistence requirements of licensed band 6425-7125MHz | ZTE Corporation | Return to | To be agreed together with other CRs for the WI at 2nd round |
| R4-2209584 | R4-2210741 | CR to TS36.141 the introduction of coexistence requirements of licensed band 6425-7125MHz | ZTE Corporation | Revised |  |
| R4-2210195 |  | System parameters for the 6 GHz licensed band | Qualcomm Incorporated | Noted |  |
| R4-2210196 |  | UE RF requirements for the 6 GHz licensed band | Qualcomm Incorporated | Noted |  |
| R4-2210197 | R4-2210742 | Introduction of NR licensed band 6425 – 7125 MHz | Qualcomm Incorporated | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210553 |  | Reply LS on request information on progress and timeline relating to 6 GHz NR licensed bands | Huawei | Approved |  |
| R4-2208244 | R4-2210739 | Introducing 6GHz licensed operation into 37.105 | CATT | Agreed |  |
| R4-2208245 |  | Introducing 6GHz licensed operation into 38.174 | CATT | Agreed |  |
| R4-2208552 |  | CR on introduction of 6GHz licensed band for 37.145-1 | Huawei, HiSilicon | Agreed |  |
| R4-2208553 |  | CR on introduction of 6GHz licensed band for 37.145-2 | Huawei, HiSilicon | Agreed |  |
| R4-2208895 |  | CR to TS 38.176-2 - Introduction of licensed 6GHz band n104 | Ericsson | Agreed |  |
| R4-2209537 |  | CR to 37.104 on introduction of n104 co-existence requirements | Nokia, Nokia Shanghai Bell | Agreed |  |
| R4-2209538 |  | CR to 37.141 on introduction of n104 co-existence requirements | Nokia, Nokia Shanghai Bell | Agreed |  |
| R4-2209582 | R4-2210740 | CR to TS38.104 the introduction of 6425-7125MHz | ZTE Corporation | Agreed | Put note 8 in [ ] |
| R4-2209583 |  | CR to TS36.104 the introduction of coexistence requirements of licensed band 6425-7125MHz | ZTE Corporation | Agreed |  |
| R4-2209584 | R4-2210741 | CR to TS36.141 the introduction of coexistence requirements of licensed band 6425-7125MHz | ZTE Corporation | Agreed |  |
| R4-2210742 | R4-2211224 | Introduction of NR licensed band 6425 – 7125 MHz | Qualcomm Incorporated | Agreed | Put note 18 in [ ] |

**R4-2210553 Reply LS on request information on progress and timeline relating to 6 GHz NR licensed bands**

*Type: LSout For: Approval  
 Source: Huawei*

**Decision: Approved.**

**GTW on May 16**

**Issue 1-2: Synchronization raster**

Decide Step size and the CORESET#0 assumptions

**Proposals:**

* Step size: 4 or 5
* CORESET#0 configurations
  + Option 1: CORESET#0 values from Table 13-5 or Table 13-6 in TS 38.213 are applied regardless of the minimum channel bandwidth for band n104.
    - Rationale: Refer to n79
  + Option 2: CORESET#0 values from Table 13-3 or Table 13-4 for frequency bands with minimum channel bandwidth 5 MHz or 10 MHz in TS 38.213 are applied for band n104
    - Rationale: Table 13-3 or Table 13-4 offers more flexibility on CORESET#0 configuration

**Discussion:**

Huawei: Some companies proposed to use larger bandwidth. If using the 20MHz CBW. Both options are OK. Option 1 has less impact on spec. We prefer Option 1 with step size 5.

ZTE: In general we are fine with Huawei. I am not sure if it is OK to put the value in [ ].

Mediatek: The assumption is then the channel raster is 15KHz? Need check the details. We need understand which table from RAN1 we should use. We should tell RAN1 what option will be. We prefer Option 2. Option 1 allows less flexibility.

Huawei: The channel raster should be based on SCS, i.e., 15KHz and 30KHz.

Ericsson: Option 1 is still OK. To address the n79 problem for smaller bandwidth we add the flag. For n104, we should clearly indicate which table will be used in spec.

Qualcomm: What is the difference between 24 RB corset #0 and 48 RB corset#0?

Huawei: To Mediatek, when we choose option 1, it follows the approach as band n79. We can use similar note to use those two tables to address the ambiguity and no impact on RAN1. To Qualcomm, the difference normally we should have flexibility to use both. But if we consider 20Mhz for this band as minimum bandwidth, which has only 51 RB. Then if we enlarge the step size 3, 4, 5, we can have only one position for SSB per channel bandwidth. It makes difficult to cover all the possible channel bandwidth if we use 48 PRB. But there is no such problem if using 24 RB.

Qualcomm: At 6GHz, the coverage is already challenging. We do not want to degrade coverage.

Huawei: considering 46 RB for 20MHz, we have to use step size 1. I wonder if other companies are OK. If we go with this, we do not need consider other step. For other channel bandwidth, we can use both 24 and 48 RBs.

Mediatek: if we assume channel raster is with 5MHz shift, there would be more problem using step size 5. You have 5 margin.

Huawei: Even if we use 5MHz shift, you cannot cover all the channel bandwidth.

Qualcomm: We would like to think about the proposal from Mediatek. For RCC country, the 5MHz grid would be OK. Some companies want to consider other countries. We can harmonize the options or specify 5MHz raster.

Ericsson: we do not want to come back to define 5MHz raster. It is not possible. We can find out the good compromise to define the channel raster and sync raster.

CATT: share the similar view as Ericsson. We should use SCS based approach. We do not want to go back to discuss the fixed channel raster for this band.

Huawei: if looking at some case, we can find some case where Mediatek proposal may not work. 2x20MHz, this is multiple of 5MHz grid. The separation is 20MHz. If we use step size 5, the separation of SSB is 3x7.2 would be 21.6 which has offset from the optimized the positions.

ZTE: we also not prefer to 5MHz raster. The problem mentioned by Qualcomm for corset problem may happen when bandwidth is 20MHz. But for 6GHz, the bandwidth will be larger than 20MHz.

Qualcomm: I am not convinced by 20Mhz is not common bandwidth.

Qualcomm: can we admit that the loss of coverage if we go with option1?

Huawei: we do not have strong opinion on this. 20MHz with 51RBs. If you want to use 48RB, then we have to use step size 1.

**Issue 2-2-2: In-band blocking**

Decide between option 1 and option 2

* Option 1: Adopt the existing in-band blocking requirement as specified for bands above 3300MHz in Tables 7.6.2-3 and 7.6.2-4 in 38.101-1 for n104. (Supported by CMCC, Huawei, China Unicom, Ericsson, ZTE, Qualcomm, Meta, CMCC, Nokia, Xiaomi)
* Option 2: Reuse existing in-band blocking requirement as specified for bands above 3300MHz except that serving signal power is set to REFSENS+9dB. (Supported by Apple, Vivo, MediaTek, )

**Discussion:**

Apple: the difference between option 1 and 2 is refsens. The option 1 is copied from the existing requirements for n79. Our proposal is compromise using fixed number of 9. We did some evaluation to come up with 9.

Qualcomm: Why do we have to go with 9? Majority companies support Option 1.

CMCC: We prefer Option 1. We still reuse the existing requirements for in-band blocking.

Ericsson: we prefer Option 1. We do not see the good reason to relax.

Huawei: We support Ericsson’s comment. We have already compared band n79. The reference sensitivity is relaxed by 1.5dB. The previously we would like relaxed ACS. Companies commented no need for relaxation of ACS. Thus we think the same logic can be used here.

ZTE: we should keep consistency between in-band blocking and ACS.

Apple: it is more challenging for UE side. We can put 9 in square bracket.

Qualcomm: Majority companies prefer 6 which is consistent with ACS and n79. We would like to put [6].

Mediatek: we also think it is challenging for UE side. The final number should be between 6~9.

Qualcomm: what makes the in-band blocking more challenging?

Apple: At least, we have provided compromised accepting 11.5dBm. Higher frequency range.

Mediatek: 11.5dB noise figure is quite challenging. If take 1.5dB relaxation, we have huge concern.

Qualcomm: the concern is on the noise figure. The problem is noise figure rather in-band blocking. Can we accept the noise figure in [] and the value here is 6.

Ericsson: We would like to understand 6~9 is needed given that the reference sensitivity is degraded. If we relax REFSEN, the in-band blocking will be relaxed.

**Agreement:**

* For in-band blocking requirement, reuse the existing requirements as specified for bands above 3300MHz except the serving signal power is set to REFSENS+[6]dB.
  + Noise figure = [11.5]dB

**Issue 2-2-3: Out-of-band blocking**

Decide the updated text proposal merged from option 1 and option 2.

* Option 1: The range 5925 – MAX(60,3\*CBW) ≤ f < FDL\_low - MAX(60,3\*CBW) is defined as OOB Range 1.
* Option 2: the power level of the interferer (PInterferer) for Range 2 shall be modified to -33dBm for the range 5925 – MAX(60,3\*CBW) ≤ f < FDL\_low - MAX(60,3\*CBW).

**Discussion:**

Moderator: the difference is if going with option 1, the blocking -44 and option 2 is -33.

Qualcomm: to Apple for -33, it is more challenging than -44. The previous discussion, companies have concern on linearity. What is the concern with linearity?

Apple: we OK with Option 1.

Ericsson: regarding option 2, it is a good proposal. We can even go with -30. -33 can be compromise. It will ensure better resilience to interference. Ericsson prefers option 2.

Qualcomm: to Ericsson: n102 is different. It is difficult to compare the unlicensed band and licensed band the implementation is different.

**Agreement:** Agree on Option 2 and have further checking during this meeting.

**Issue 2-2-5: 4RX**

Decide on whether Band n104 is also indicated with 4Rx as the baseline.

* Option 1: Yes, as other FR1 High frequency TDD bands such as Band n41, n77, n78, n79, and n48
* Option 2: No, 4RX should be optional

**Discussion:**

Skyworks: in our view, we have problem with the wording of option 1. If it is mandatory, we are not OK with it. It should be optional.

ZTE: That 4Rx is baseline means it is mandatory. Support Option 1.

Apple: We do not mind to define the requirement for 4Rx. But it should be optional.

Huawei: In current specification, for high frequency band > 2.6GHz, all bands support 4Rx as baseline.

Vivo: support 4Rx as optional feature and check if it is mandatory in the future.

Qualcomm: maybe optional could be OK. To make mandatory would be less flexible. We are OK with Option 2.

Skyworks: when 4Rx mandatory is decided, it is up to 5Ghz. Not beyond it.

CMCC: support option 1. 4Rx as mandatory.

CHTTL: support CMCC view.

Mediatek: support option 2. To define RF requirement is necessary.

**Agreement:** Specify 4Rx requirements for n104 and further discuss if 4Rx should be mandatory or optional.

**Issue 3-1-1:ΔfOBUE and ΔfOOB**

From the discussion at thread [301], BS type 1-H is excluded for n102.

**Tentative agreements:**

Define ΔfOBUE = 100 MHz and ΔfOOB = 100 MHz for BS type 1-H and type 1-O, and ΔfOBUE = 40 MHz and ΔfOOB = 60 MHz for BS type 1-C.

**Agreement:** Define ΔfOBUE = 100 MHz and ΔfOOB = 100 MHz for BS type 1-H and type 1-O, and ΔfOBUE = 40 MHz and ΔfOOB = 60 MHz for BS type 1-C.

**Issue 3-1-2: Out-of-band blocking**

Decide between Option 1 and 2

* **Option 1:** 
  + the blocking level is set to a level of -35 dBm for the frequency range (FUL\_low -500) to (FUL\_low -ΔfOOB) and (FUL\_high +ΔfOOB) to (FUL\_high +500).
  + To add the new 6GHz licensed band into the operating band list in table 7.5.2-1a of TS 38.104 instead of adding a new NOTE (to include text in proposal 1) in table 7.5.2-1.(Nokia, Huawei, Samsung)
* **Option 2:** 
  + Keep the sub 6GHz out of band blocking requirement for the new 6 GHz licensed band n104. (CMCC, Ericsson, ZTE, CATT)

**Discussion:**

Moderator: consider the compromise approach suing 200MHz as boundary.

ZTE: the previous agreement is option 2. We do not see the problem with Option 2. But we can compromise to Option 1.

Ericsson: I do not see the reason to relax the requirements and would like to keep the requirement as it is.

Huawei: we do not see such high interference and try to balance the request for the filter for Tx and Rx.

Samsung: our preference is option 1. For the blocker interference level, the key issue the operation frequency range. For 6-7 GHz, -35dBm interference is defined. Why should we consider it in the real scenario. Our preference is Option 1. We can consider the compromise solution as Moderator proposed.

CMCC: we prefer Option 2. We think the frequency range below 6Ghz is heavily used. It really need to take care of out-of-band blocking. We have already make some relaxation for delat-oob. We do not want to relax more for OOB band blocking.

Nokia: delta\_OOB=100MHz companies can agree not to relax. And we can only relax 1-C.

Ericsson: Nokia proposal would make sense and further consider it in the second round.

Huawei: do you still use 500MHz as boundary for Option 1? And use 100MHz for 1-O and 1-C.

Nokia: option 1 is same as n46 requirement.

**Agreement:**

* [Follow Option 1 for 1-C]
* [Follow Option 2 for 1-O and 1-H]

**Issue 3-1-3: OBUE mask**

Decide between Option 1 and 2

* **Option 1:** 
  + Define the step size of the OBUE mask to 50/100 MHz type 1-H and 1-O
  + Define the step size of the OBUE mask to 20/40 MHz type 1-C
* **Option 2:** 
  + Define the step size of the OBUE mask to 50/100 MHz for all BS types

**Discussion:**

Nokia: we prefer Option 1. We can put it in [].

Ericsson: we prefer option 2 and can compromise to Option 1.

CATT: we can compromise to Option 1.

ZTE: can compromise to Option1.

**Agreement:** Agree with Option 1.

**Chair =>** Please all the authors of CRs take the agreement reached in GTW on May 16 into account when preparing the CRs.

#### 8.1.1 General

#### 8.1.2 System parameters

**R4-2208196 System parameters for 6GHz licensed band**

*Type: discussion For: Approval  
 Source: CATT*

**Decision: Noted.**

**R4-2208407 Discussion on system parameters for 6GHz licensed spectrum**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2208547 System parameters for 6GHz NR licensed band**

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

**Decision: Noted.**

**R4-2208655 System Parameters of n104**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208860 Discussion the remaining issues on system parameters for 6G license band**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2208890 Licensed 6GHz: General aspects - system parameters**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution discusses the remaining system parameters issues for badn n104

**Decision: Noted.**

**R4-2209579 Discussion on system parameters for 6425-7125MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2210195 System parameters for the 6 GHz licensed band**

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

**Decision: Noted.**

#### 8.1.3 UE RF requirements

**R4-2207664 On UE Rx requirements for the licensed operation in the upper 6GHz frequency range**

*Type: discussion For: Decision  
 Source: Apple*

**Decision: Noted.**

**R4-2208197 UE RF requirements for 6GHz licensed band**

*Type: discussion For: Approval  
 Source: CATT*

**Decision: Withdrawn.**

**R4-2208340 Discussion on UE REFSENS for 6GHz licensed band**

*Type: discussion For: Approval  
 Source: Mediatek India Technology Pvt.*

**Decision: Noted.**

**R4-2208408 Discussion on UE requirements for 6GHz licensed spectrum**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2208548 Remaining issues on UE TX RF requirements**

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

**Decision: Noted.**

**R4-2208549 Remaining issues on UE RX RF requirements**

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

**Decision: Noted.**

**R4-2208861 REFSENs for 6G license band**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2208891 Licensed 6GHz: Remaining UE RF open issues**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution discusses the remaining UE RF open issues for band n104

**Decision: Noted.**

**R4-2209580 Discussion on UE RF requirements for 6425-7125MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2210196 UE RF requirements for the 6 GHz licensed band**

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

**Decision: Noted.**

**R4-2210197 Introduction of NR licensed band 6425 – 7125 MHz**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1112 rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2210742 (from R4-2210197).**

**R4-2210742 Introduction of NR licensed band 6425 – 7125 MHz**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1112 rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2211224 (from R4-2210742).**

**R4-2211224 Introduction of NR licensed band 6425 – 7125 MHz**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1112 rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

#### 8.1.4 BS RF requirements

**R4-2207921 Proposals on BS RF requirements for introduction of 6GHz licensed band**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution has provided further proposals on BS RF requirements for the new 6GHz licensed band (6425 – 7125 MHz) based on the agreed way forward.

**Decision: Noted.**

**R4-2207922 CR to TR 38.176-1 on introduction of 6GHz licensed band**

*Type: CR For: Agreement  
 38.176-1 v17.0.0 CR-0005 rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduce co-existence and co-location spurious emission requriements for 6GHz licensed band.

**Decision: Agreed.**

**R4-2208242 Remaining issue for BS RF requriement in 6GHz band**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208243 Introducing 6GHz licensed operation into 38.141-1**

*Type: CR For: Agreement  
 38.141-1 v17.5.0 CR-0270 rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision: Not pursued.**

**R4-2208244 Introducing 6GHz licensed operation into 37.105**

*Type: CR For: Agreement  
 37.105 v17.5.0 CR-0254 rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision: Revised to R4-2210739 (from R4-2208244).**

**R4-2210739 Introducing 6GHz licensed operation into 37.105**

*Type: CR For: Agreement  
 37.105 v17.5.0 CR-0254 rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2208245 Introducing 6GHz licensed operation into 38.174**

*Type: CR For: Agreement  
 38.174 v17.0.0 CR-0027 rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2208409 Discussion on BS requirements for 6GHz licensed spectrum**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2208550 Remaining issues on BS RF requirements**

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

**Decision: Noted.**

**R4-2208551 Measurement uncertainty for 6 to 7.125GHz**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2208552 CR on introduction of 6GHz licensed band for 37.145-1**

*Type: CR For: Agreement  
 37.145-1 v17.5.0 CR-0286 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2208553 CR on introduction of 6GHz licensed band for 37.145-2**

*Type: CR For: Agreement  
 37.145-2 v17.5.0 CR-0328 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2208892 Licensed 6GHz: Remaining BS RF open issues**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution discusses the remaining BS RF open issues for band n104

**Decision: Noted.**

**R4-2208894 CR to TS 38.141-2 - Introduction of licensed 6GHz band n104**

*Type: CR For: Agreement  
 38.141-2 v17.5.0 CR-0399 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This contribution is a CR to TS 38.141-2 introducing band n104

**Decision: Not pursued.**

**R4-2208895 CR to TS 38.176-2 - Introduction of licensed 6GHz band n104**

*Type: CR For: Agreement  
 38.176-2 v17.0.0 CR-0006 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This contribution is a CR to TS 38.176-2 introducing band n104

**Decision: Agreed.**

**R4-2209537 CR to 37.104 on introduction of n104 co-existence requirements**

*Type: CR For: Endorsement  
 37.104 v17.5.0 CR-0964 rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2209538 CR to 37.141 on introduction of n104 co-existence requirements**

*Type: CR For: Endorsement  
 37.141 v17.5.0 CR-1010 rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2209581 Discussion on BS RF requirements for 6425-7125MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2209582 CR to TS38.104 the introduction of 6425-7125MHz**

*Type: CR For: Endorsement  
 38.104 v17.5.0 CR-0383 rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2210740 (from R4-2209582).**

**R4-2210740 CR to TS38.104 the introduction of 6425-7125MHz**

*Type: CR For: Endorsement  
 38.104 v17.5.0 CR-0383 rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

**R4-2209583 CR to TS36.104 the introduction of coexistence requirements of licensed band 6425-7125MHz**

*Type: CR For: Endorsement  
 36.104 v17.5.0 CR-4958 rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

**R4-2209584 CR to TS36.141 the introduction of coexistence requirements of licensed band 6425-7125MHz**

*Type: CR For: Endorsement  
 36.141 v17.5.0 CR-1336 rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2210741 (from R4-2209584).**

**R4-2210741 CR to TS36.141 the introduction of coexistence requirements of licensed band 6425-7125MHz**

*Type: CR For: Endorsement  
 36.141 v17.5.0 CR-1336 rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

#### 8.1.5 Others

**R4-2208893 CR to TS 38.133 - Introduction of licensed 6GHz band n104**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2343 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This contribution is a CR to TS 38.133 introducing band n104

**Decision: Revised to R4-2210987 (from R4-2208893).**

**R4-2210987 CR to TS 38.133 - Introduction of licensed 6GHz band n104**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2343 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This contribution is a CR to TS 38.133 introducing band n104

**Decision: Agreed.**

### 8.2 Introduction of 900 MHz spectrum to 5G NR applicable for Rail Mobile Radio

#### 8.2.1 UE RF requirements

#### 8.2.2 BS RF requirements

#### 8.2.3 RRM requirements

**R4-2208901 CR to TS 38.133: RMR 900MHz band introduction**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2344 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This contribution is a CR to TS 38.133: RMR n100band introduction

**Decision: Revised to R4-2210988 (from R4-2208901).**

**R4-2210988 CR to TS 38.133: RMR 900MHz band introduction**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2344 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This contribution is a CR to TS 38.133: RMR n100band introduction

**Decision: Agreed.**

**R4-2209675 Draft CR to TS 38.133: implementation of RMR900 band n100, Rel-17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In this CR to TS 38.133, the RMR900 operating band n100 is introduced for the NR\_RAIL\_EU\_900MHz WI.

**Decision: Not pursued.**

### 8.3 Issues arising from basket WIs but not subject to block approval

**[103-e][115] R17\_Maintenance, AI 8.3 – Dominique Brunel**

**R4-2210250 Email summary for [103-e][115] NR\_Baskets\_Part\_1**

*Type: other For: Information  
 Source: Moderator (Skyworks)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210450 (from R4-2210250).**

**R4-2210450 Email summary for [103-e][115] NR\_Baskets\_Part\_1**

*Type: other For: Information  
 Source: Moderator (Skyworks)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210554 | TP on TR 37.717-11-11 Update on the MSD value of DC\_(n)3 | Huawei, MediaTek, Qualcomm, Skyworks | Use averaged MSD across 3 companies with 10RB UL configuration |
| R4-2211128 | Draft TP to TR on DC\_1A\_(n)3AA | Huawei | Higher order combination pending on DC\_(n)3AA MSD from last meeting |
| R4-2210555 | WF on CA\_n18-n28 second cross-band isolation MSD test point | Skyworks Solutions Inc. | Captures the proposed test point and MSD value range for final value in next meeting |
| R4-2210556 | WF on guidelines on valid CBW for higher band combination configurations depending on fallbacks | ZTE, Skyworks Solutions Inc. | Captures the guideline that “for higher order combinations, the valid CBW set should be the CBWs common to all lower fallbacks” |
| R4-2210557 | WF on criteria for triple beat MSD analysis | Qualcomm, Skyworks Solutions Inc. | Captures the guideline on band group criteria together with former criterias to form a complete set of guidelines |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2208002](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208002.zip) |  | DC\_(n)3AA MSD | Qualcomm Incorporated | Noted |  |
| [R4-2210233](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210233.zip) |  | Single Uplink MSD for DC\_(n)3AA | Skyworks Solutions Inc. | Noted |  |
| [R4-2208004](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208004.zip) |  | DC\_(n)7AA MSD | Qualcomm Incorporated | Noted |  |
| [R4-2209560](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209560.zip) | R4-2210743 | TP for TR 37 717-11-11 to include CA\_n7(AA) | Ericsson, Telstra | Revised  based on Draft revision that is agreeable  [revision of R4-2209560 TP for TR 37.717-11-11 to include DC\_(n)7](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_103-e/Inbox/Drafts/%5B103-e%5D%5B115%5D%20NR_Baskets_Part_1/Round%201/revision%20of%20R4-2209560%20TP%20for%20TR%2037.717-11-11%20to%20include%20DC_(n)7.doc) | TP is revised so that only single switched UL is included. No MSD and A-MPR needed then |
| [R4-2209252](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209252.zip) |  | second test point for CA\_n18-n28 MSD | Skyworks Solutions Inc. | Noted | A way forward will capture the agreements to finalize the second MSD point in next meeting |
| [R4-2207716](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207716.zip) |  | TP for TR 37.717-21-11 Addition of DC\_12-30\_n5 | AT&T | Approved | No comment on proposed MSD values |
| [R4-2207717](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207717.zip) |  | TP for TR 37.717-21-11 Addition of DC\_14-30\_n5 | AT&T | Approved | No comment on proposed MSD values |
| [R4-2208707](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208707.zip) |  | TP for TR38.717-03-02\_CA\_n28A-n40A-n41A | ZTE Corporation | Approved | No comment on proposed MSD values |
| [R4-2208003](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208003.zip) |  | DC\_28\_n40-n41 MSD | Qualcomm Incorporated | Noted | MSD value captured in above TP |
| [R4-2207989](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207989.zip) |  | Completion of inter-band band combinations with intra-band ULCA in UL configuration | Skyworks Solutions Inc. | Noted | Focus on CRs and missing MSDs |
| [R4-2207988](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207988.zip) |  | Additional criteria for triple beat issue detection | Skyworks Solutions Inc. | Noted | Capture agreements on triple beat analysis set of criteria in a WF |
| [R4-2210108](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210108.zip) | R4-2210744 | Draft CR to TS 38.101-3 V17.5.0 on intra-band ULCA UL configurations | Skyworks Solutions Inc. | Revised | Agreeable in general but need to crosscheck that DC\_25A-n41C MSD test point does not have an overlap with triple beat |
| [R4-2207993](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207993.zip) | R4-2210745 | Draft CR to TS 38.101-1 V17.5.0 on intra-band ULCA UL configurations | Skyworks Solutions Inc. | Revised | Agreeable in general but need to crosscheck CA\_n3A-n78(2A) MSD test point |
| [R4-2208284](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208284.zip) |  | CR for release independent of Rel.17 NE-DC FR1 and FR2 combinations | CHTTL, CMCC, SGS Wireless, Samsung | Agreed | No comment from experts |
| [R4-2208853](https://urldefense.proofpoint.com/v2/url?u=https-3A__www.3gpp.org_ftp_TSG-5FRAN_WG4-5FRadio_TSGR4-5F103-2De_Docs_R4-2D2208853.zip&d=DwMFAg&c=VYRDWu-sKuQrybEAJ2u-dYX_FK6X1lTrDf-PKXUa2P4&r=pRthG0xxDB77vg4aSNBQn5JOtJLs0OZjgw-oylT0McK0oow-yPNwujyHTOyyY1lN&m=hwUTykQVEsuFZk7BoqVL5jZhkHONLCBogbAxGFFh8jgM01lYlLhqsRq5VZgD8KSd&s=35uLvmyZz4wck0-SFG6KoYnTVsN_aRtsPMxLmJal6iY&e=) | R4-2210746 | Draft CR to 38101-1-h50 for SUL general part | MediaTek Inc. | Revised | Still questions about the need and on the notes. Further discussion in round2 |
| [R4-2207718](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207718.zip) | R4-2210747 | TP for TR 37.717-21-11 Addition of DC\_14-66\_n5 | AT&T | Revised | To be revised according to shared draft revision |
| [R4-2209936](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209936.zip) | R4-2210748 | TP to TR 38.717-02-01 Addition of CA\_n7-n40 | Nokia | Revised | Capture agreement in round 2. n40 UL configuration and architecture aspects to be further discussed |
| [R4-2209942](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209942.zip) |  | TP to TR 38.717-03-02 Addition of CA\_n1-n7-n40 | Nokia | Return to | Pending lower order fallback approval |
| [R4-2209944](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209944.zip) |  | TP to TR 38.717-03-02 Addition of CA\_n7-n8-n40 | Nokia | Return to | Pending lower order fallback approval |
| [R4-2210153](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210153.zip) |  | Draft CR to TS 38.101-1 V17.5.0 on removing CBW in NRCA band combination that are missing in lower fallbacks | Skyworks Solutions Inc. | Endorsed | Agreed by experts, derive guideline in WF |
| [R4-2209273](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209273.zip) | R4-2210749 | Draft CR for 38.101-3 to remove incorrect UL configuration for DC\_1\_n28-n75 and DC\_3\_n28-n75 and add back DC\_3C-20A\_n7A-n28A | Huawei, HiSilicon, DT | Revised  Based on Draft revision that is agreeable  [Revision of R4-2209273.docx](https://urldefense.proofpoint.com/v2/url?u=https-3A__www.3gpp.org_ftp_tsg-5Fran_WG4-5FRadio_TSGR4-5F103-2De_Inbox_Drafts_-255B103-2De-255D-255B117-255D-2520NR-5FBaskets-5FPart-5F3_Round-25201_Revision-2520of-2520R4-2D2209273.docx&d=DwMFAg&c=VYRDWu-sKuQrybEAJ2u-dYX_FK6X1lTrDf-PKXUa2P4&r=pRthG0xxDB77vg4aSNBQn5JOtJLs0OZjgw-oylT0McK0oow-yPNwujyHTOyyY1lN&m=SkIff6o0F_Hg17etV_gJs7BgeEJh2UNesDWZ1WLYjSJLQRgxZSjGgghIz6dLptca&s=j8WWSFh8rn2OqKlWjPlt2pZpfr3OvIEou2FYmicP0QY&e=) | Triple beat issue UL DC\_3C\_n28A configuration is removed in draft revision |
| [R4-2209274](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209274.zip) | R4-2210750 | Draft CR for 38.101-3 to add UL configuration DC\_3C\_n28A and DC\_3C\_n78A for DC\_3C-20A\_n28A-n78A | Huawei, HiSilicon, DT | Revised  Based on Draft revision that is agreeable  [Revision of R4-2209274.docx](https://urldefense.proofpoint.com/v2/url?u=https-3A__www.3gpp.org_ftp_tsg-5Fran_WG4-5FRadio_TSGR4-5F103-2De_Inbox_Drafts_-255B103-2De-255D-255B117-255D-2520NR-5FBaskets-5FPart-5F3_Round-25201_Revision-2520of-2520R4-2D2209274.docx&d=DwMFAg&c=VYRDWu-sKuQrybEAJ2u-dYX_FK6X1lTrDf-PKXUa2P4&r=pRthG0xxDB77vg4aSNBQn5JOtJLs0OZjgw-oylT0McK0oow-yPNwujyHTOyyY1lN&m=SkIff6o0F_Hg17etV_gJs7BgeEJh2UNesDWZ1WLYjSJLQRgxZSjGgghIz6dLptca&s=HsqSB85h_mdVqkWikxv7gekuFusP-XmDiYSwykyMerk&e=) | Triple beat issue UL DC\_3C\_n28A configuration is removed in draft revision |
| [R4-2209568](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209568.zip) | R4-2210751 | draft CR 38.101-3 to add missing configurations | Ericsson, BT plc | Revised  based on  Draft revision that is agreeable  [revision of R4-2209568 draft CR 38.101-3 to add missing configurations](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_103-e/Inbox/Drafts/%5B103-e%5D%5B115%5D%20NR_Baskets_Part_1/Round%201/revision%20of%20R4-2209568%20draft%20CR%2038.101-3%20to%20add%20missing%20configurations.docx) | Triple beat issue UL DC\_3C\_n28A configuration is removed in draft revision |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210554 |  | TP on TR 37.717-11-11 Update on the MSD value of DC\_(n)3 | Huawei, MediaTek, Qualcomm, Skyworks | Approved |  |
| R4-2211128 |  | Draft TP to TR on DC\_1A\_(n)3AA | Huawei | Approved |  |
| R4-2210555 |  | WF on CA\_n18-n28 second cross-band isolation MSD test point | Skyworks Solutions Inc. | Approved |  |
| R4-2210556 |  | WF on guidelines on valid CBW for higher band combination configurations depending on fallbacks | ZTE, Skyworks Solutions Inc. | Approved |  |
| R4-2210557 |  | WF on criteria for triple beat MSD analysis | Qualcomm, Skyworks Solutions Inc. | Approved |  |
| R4-2210743 |  | TP for TR 37 717-11-11 to include CA\_n7(AA) | Ericsson, Telstra | Approved |  |
| R4-2210744 | R4-2211214 | Draft CR to TS 38.101-3 V17.5.0 on intra-band ULCA UL configurations | Skyworks Solutions Inc. | Endorsed |  |
| R4-2210745 |  | Draft CR to TS 38.101-1 V17.5.0 on intra-band ULCA UL configurations | Skyworks Solutions Inc. | Endorsed |  |
| R4-2210746 |  | Draft CR to 38101-1-h50 for SUL general part | MediaTek Inc. | Endorsed |  |
| R4-2210747 |  | TP for TR 37.717-21-11 Addition of DC\_14-66\_n5 | AT&T | Approved |  |
| R4-2210748 |  | TP to TR 38.717-02-01 Addition of CA\_n7-n40 | Nokia | Approved |  |
| [R4-2209942](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209942.zip) |  | TP to TR 38.717-03-02 Addition of CA\_n1-n7-n40 | Nokia | Approved |  |
| [R4-2209944](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209944.zip) |  | TP to TR 38.717-03-02 Addition of CA\_n7-n8-n40 | Nokia | Approved |  |
| R4-2210749 |  | Draft CR for 38.101-3 to remove incorrect UL configuration for DC\_1\_n28-n75 and DC\_3\_n28-n75 and add back DC\_3C-20A\_n7A-n28A | Huawei, HiSilicon, DT | Endorsed |  |
| R4-2210750 |  | Draft CR for 38.101-3 to add UL configuration DC\_3C\_n28A and DC\_3C\_n78A for DC\_3C-20A\_n28A-n78A | Huawei, HiSilicon, DT | Endorsed |  |
| R4-2210751 |  | draft CR 38.101-3 to add missing configurations | Ericsson, BT plc | Endorsed |  |

**R4-2210554 TP on TR 37.717-11-11 Update on the MSD value of DC\_(n)3**

*Type: pCR For: Approval  
 Source: Huawei, MediaTek, Qualcomm, Skyworks*

**Decision: Approved.**

**R4-2210555 WF on CA\_n18-n28 second cross-band isolation MSD test point**

*Type: other For: Approval  
 Source: Skyworks Solutions Inc.*

**Decision: Approved.**

**R4-2210556 WF on guidelines on valid CBW for higher band combination configurations depending on fallbacks**

*Type: other For: Approval  
 Source: ZTE, Skyworks Solutions Inc.*

**Decision: Approved.**

**R4-2210557 WF on criteria for triple beat MSD analysis**

*Type: other For: Approval  
 Source: Qualcomm, Skyworks Solutions Inc.*

**Decision: Approved.**

**R4-2211128 Draft TP to TR on DC\_1A\_(n)3AA**

*Type: pCR For: Approval  
 Source: Huawei*

**Decision: Approved.**

#### 8.3.1 UE RF requirements

**R4-2207716 TP for TR 37.717-21-11 Addition of DC\_12-30\_n5**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Approved.**

**R4-2207717 TP for TR 37.717-21-11 Addition of DC\_14-30\_n5**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Approved.**

**R4-2207988 Additional criteria for triple beat issue detection**

*Type: discussion For: Approval  
 Source: Skyworks Solutions Inc.*

**Abstract:**

For this meeting, a formal check of all potential triple beat cases identified in the latest revision of 31.101-3 is presented in [2]. Based on this premise, we propose that an additional criterion related to band separation be added to detect the need fo

**Decision: Noted.**

**R4-2207989 Completion of inter-band band combinations with intra-band ULCA in UL configuration**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Since we are approaching the conclusion of Release 17 for the band combination baskets, we have evaluated the latest revisions of 38.101-1 and 38-101-3 for the completeness of inter-band combinations with contiguous or non-contiguous UL CA as part of the

**Decision: Noted.**

**R4-2207993 Draft CR to TS 38.101-1 V17.5.0 on intra-band ULCA UL configurations**

*Type: draftCR For: Agreement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Providing corrections to inter-band NRCA combinations with ULCA in UL configuration for completeness

**Decision: Revised to R4-2210745 (from R4-2207993).**

**R4-2210745 Draft CR to TS 38.101-1 V17.5.0 on intra-band ULCA UL configurations**

*Type: draftCR For: Agreement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Providing corrections to inter-band NRCA combinations with ULCA in UL configuration for completeness

**Decision: Endorsed.**

**R4-2208002 DC\_(n)3AA MSD**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2208003 DC\_28\_n40-n41 MSD**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2208004 DC\_(n)7AA MSD**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2208707 TP for TR38.717-03-02\_CA\_n28A-n40A-n41A**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2209252 second test point for CA\_n18-n28 MSD**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution we make our proposal for a second test point for cross band isolation MSD for CA\_n18-n28 and suggest implementing this only when the simplified cross band requirement is in place.

**Decision: Noted.**

**R4-2209560 TP for TR 37 717-11-11 to include CA\_n7(AA)**

*Type: pCR For: Approval  
 37.717-11-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Ericsson, Telstra*

**Abstract:**

TP for TR 37 717-11-11 to include CA\_n7(AA)

**Decision: Revised to R4-2210743 (from R4-2209560).**

**R4-2210743 TP for TR 37 717-11-11 to include CA\_n7(AA)**

*Type: pCR For: Approval  
 37.717-11-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Ericsson, Telstra*

**Abstract:**

TP for TR 37 717-11-11 to include CA\_n7(AA)

**Decision: Approved.**

**R4-2210108 Draft CR to TS 38.101-3 V17.5.0 on intra-band ULCA UL configurations**

*Type: draftCR For: Agreement  
 38.101-3 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Providing corrections to inter-band ENDC combinations with ULCA in UL configuration for completeness

**Decision: Revised to R4-2210744 (from R4-2210108).**

**R4-2210744 Draft CR to TS 38.101-3 V17.5.0 on intra-band ULCA UL configurations**

*Type: draftCR For: Agreement  
 38.101-3 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Providing corrections to inter-band ENDC combinations with ULCA in UL configuration for completeness

**Decision: Revised to R4-2211214 (from R4-2210744).**

**R4-2211214 Draft CR to TS 38.101-3 V17.5.0 on intra-band ULCA UL configurations**

*Type: draftCR For: Agreement  
 38.101-3 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Providing corrections to inter-band ENDC combinations with ULCA in UL configuration for completeness

**Decision: Endorsed.**

**R4-2210233 Single Uplink MSD for DC\_(n)3AA**

*Type: discussion For: Approval  
 38.101-3 v CR- rev Cat: (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Decision: Noted.**

#### 8.3.2 NR-U intra-band contiguous UL CA

### 8.4 NR intra band Carrier Aggregation for xCC DL/yCC UL including contiguous and non-contiguous spectrum (x>=y)

**[103-e][116] NR\_Baskets\_Part\_2, AI 8.4, 8.11, 8.12, 8.13, 8.14 – Iwo Angelow**

**R4-2210251 Email discussion summary [103-e][116] NR\_Baskets\_Part\_2**

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

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

#### 8.4.1 Rapporteur Input (WID/TR/CR)

**R4-2209542 Revised WID NR Intra-band Rel-17**

*Type: WID revised For: Endorsement  
 Source: Ericsson*

**Abstract:**

Revised WID NR Intra-band Rel-17

**Decision:** The document was **for email approval**.

**R4-2209546 big CR 38.101-1 new combinations Rel-17 NR Intra-band**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1103 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

big CR 38.101-1 new combinations Rel-17 NR Intra-band

**Decision:** The document was **for email approval**.

**R4-2209547 big CR 38.101-2 new combinations Rel-17 NR Intra-band**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0463 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

big CR 38.101-2 new combinations Rel-17 NR Intra-band

**Decision:** The document was **for email approval**.

**R4-2209551 TR 38.717-01-01 v0.9.0 Rel-17 NR Intra-band**

*Type: draft TR For: Agreement  
 38.717-01-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

TR 38.717-01-01 v0.9.0 Rel-17 NR Intra-band

**Decision:** The document was **for email approval**.

#### 8.4.2 UE RF requirements for FR1

**R4-2209111 DraftCR 38.101-1: Addition of CA\_n25(2A) and CA\_n25(3A) BCS4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210358 (from R4-2209111).**

**R4-2210358 DraftCR 38.101-1: Addition of CA\_n25(2A) and CA\_n25(3A) BCS4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209112 DraftCR 38.101-1: CA\_n41(3A) BCS4 and CA\_n41(4A) BCS0 and 4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210359 (from R4-2209112).**

**R4-2210359 DraftCR 38.101-1: CA\_n41(3A) BCS4 and CA\_n41(4A) BCS0 and 4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209113 DraftCR 38.101-1: CA\_n41(A-C) BCS4 and CA\_n41(2A-C) BCS0 and 4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210360 (from R4-2209113).**

**R4-2210360 DraftCR 38.101-1: CA\_n41(A-C) BCS4 and CA\_n41(2A-C) BCS0 and 4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209114 DraftCR 38.101-1: CA\_n66(2A) BCS4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210361 (from R4-2209114).**

**R4-2210361 DraftCR 38.101-1: CA\_n66(2A) BCS4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209115 DraftCR 38.101-1: CA\_n71(2A) BCS4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210363 (from R4-2209115).**

**R4-2210362 DraftCR 38.101-1: CA\_n71(2A) BCS4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209116 DraftCR 38.101-1:CA\_n71B BCS4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210363 (from R4-2209116).**

**R4-2210363 DraftCR 38.101-1:CA\_n71B BCS4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209117 DraftCR 38.101-1: CA\_n77(2A) BCS4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210364 (from R4-2209117).**

**R4-2210364 DraftCR 38.101-1: CA\_n77(2A) BCS4**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Postponed.**

**R4-2209118 DraftCR 38.101-1: CA\_n25-n41 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210377 (from R4-2209118).**

**R4-2210377 DraftCR 38.101-1: CA\_n25-n41 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

#### 8.4.3 UE RF requirements for FR2

### 8.5 NR inter-band Carrier Aggregation/Dual Connectivity for 2 bands DL with x bands UL (x=1, 2)

**[103-e][117] NR\_Baskets\_Part\_3, AI 8.5, 8.6, 8.7, 8.8, 8.9, 8.10, 8.15, 8.16, 8.17, 8.18, 8.19 – Johannes Hejselbaek**

**R4-2210252 Email discussion summary [103-e][117] NR\_Baskets\_Part\_3**

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

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

#### 8.5.1 Rapporteur Input (WID/TR/CR)

**R4-2208708 Revised WID on Rel-17 NR Inter-band Carrier Aggregation/Dual Connectivity for 2 bands DL with x bands UL (x=1,2)**

*Type: WID revised For: Approval  
 Source: ZTE Corporation*

**Decision:** The document was **for email approval**.

**R4-2208709 Big 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 v17.5.0 CR-1075 rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision:** The document was **for email approval**.

**R4-2208710 Big CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-2**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0457 rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision:** The document was **for email approval**.

**R4-2208711 Big 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 v17.5.0 CR-0716 rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision:** The document was **for email approval**.

**R4-2209035 Draft TR 38.717-02-01 v0.9.0**

*Type: draft TR For: Endorsement  
 38.717-02-01 v0.9.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Wistron Telecom AB*

**Decision:** The document was **for email approval**.

#### 8.5.2 NR inter band CA requirements without any FR2 band(s)

**R4-2207744 Draft CR for 38.101-1 to introduce CA\_n3A-n41B,CA\_n28A-n41B and CA\_n41B-n77A**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: KDDI Corporation*

**Decision: Revised to R4-2210378 (from R4-2207744).**

**R4-2210378 Draft CR for 38.101-1 to introduce CA\_n3A-n41B,CA\_n28A-n41B and CA\_n41B-n77A**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: KDDI Corporation*

**Decision: Endorsed.**

**R4-2207828 Draft CR for TS 38.101-1: Support of BCS2 in CA\_n41-n79**

*Type: draftCR For: (not specified)  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2207829 Draft CR for TS 38.101-1: Support of n77(3A) in CA\_n77-n79**

*Type: draftCR For: (not specified)  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2207986 TP for TR 38.717-02-01: Updates to CA\_n24-n77 RefSens requirements clause**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Ligado Networks*

**Decision: Revised to R4-2210379 (from R4-2207986).**

**R4-2210379 TP for TR 38.717-02-01: Updates to CA\_n24-n77 RefSens requirements clause**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Ligado Networks*

**Decision: Approved.**

**R4-2208438 TP for TR 38.717-02-01 CA\_n5-n40**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Revised to R4-2210380 (from R4-2208438).**

**R4-2210380 TP for TR 38.717-02-01 CA\_n5-n40**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Approved.**

**R4-2208689 Draft CR to TS38.101-1: CA\_n34A-n79C**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2208690 TP for TR 38.717-02-01: CA\_n28A-n34A**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2210381 (from R4-2208690).**

**R4-2210381 TP for TR 38.717-02-01: CA\_n28A-n34A**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2208691 TP for TR 38.717-02-01: CA\_n28A-n39A**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2210382 (from R4-2208691).**

**R4-2210382 TP for TR 38.717-02-01: CA\_n28A-n39A**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2208692 TP for TR 38.717-02-01: CA\_n34A-n41A/C**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2210383 (from R4-2208692).**

**R4-2210383 TP for TR 38.717-02-01: CA\_n34A-n41A/C**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2209119 DraftCR 38.101-1: CA\_n25-n66 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210384 (from R4-2209119).**

**R4-2210384 DraftCR 38.101-1: CA\_n25-n66 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209120 DraftCR 38.101-1: CA\_n25-n71 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210385 (from R4-2209120).**

**R4-2210385 DraftCR 38.101-1: CA\_n25-n71 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209121 DraftCR 38.101-1: CA\_n25-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210386 (from R4-2209121).**

**R4-2210386 DraftCR 38.101-1: CA\_n25-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209122 DraftCR 38.101-1: CA\_n41-n66 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210387 (from R4-2209122).**

**R4-2210387 DraftCR 38.101-1: CA\_n41-n66 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209123 DraftCR 38.101-1: CA\_n41-n71 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210388 (from R4-2209123).**

**R4-2210388 DraftCR 38.101-1: CA\_n41-n71 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209124 DraftCR 38.101-1: CA\_n41-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210389 (from R4-2209124).**

**R4-2210389 DraftCR 38.101-1: CA\_n41-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209125 DraftCR 38.101-1: CA\_n66-n71 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210390 (from R4-2209125).**

**R4-2210390 DraftCR 38.101-1: CA\_n66-n71 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209126 DraftCR 38.101-1: CA\_n66-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210391 (from R4-2209126).**

**R4-2210391 DraftCR 38.101-1: CA\_n66-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209127 DraftCR 38.101-1: CA\_n71-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210392 (from R4-2209127).**

**R4-2210392 DraftCR 38.101-1: CA\_n71-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209275 Draft CR for 38.101-1 to add configuration CA\_n3B-n79C**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209283 TP for 38.717-02-01 CA\_n28A-n79C with UL\_n79C**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209284 TP for 38.717-02-01 CA\_n3A-n79C with UL\_n79C**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209285 TP for 38.717-02-01 CA\_n3A-n78C with UL\_n78C**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210393 (from R4-2209285).**

**R4-2210393 TP for 38.717-02-01 CA\_n3A-n78C with UL\_n78C**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209286 TP for 38.717-02-01 CA\_n1A-n78C with UL\_n78C**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209287 Updated TP for 38.717-02-01 CA\_n8A-n77A**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, Softbank*

**Decision: Approved.**

**R4-2210394 Updated TP for 38.717-02-01 CA\_n8A-n77A**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, Softbank*

**Decision: Withdrawn.**

**R4-2209927 TP to TR 38.717-02-01 Addition of CA\_n8-n38**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Telefonica*

**Decision: Revised to R4-2210395 (from R4-2209927).**

**R4-2210395 TP to TR 38.717-02-01 Addition of CA\_n8-n38**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Telefonica*

**Decision: Approved.**

**R4-2209928 TP to TR 38.717-02-01 Addition of CA\_n20-n40**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Telefonica*

**Decision: Revised to R4-2210396 (from R4-2209928).**

**R4-2210396 TP to TR 38.717-02-01 Addition of CA\_n20-n40**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Telefonica*

**Decision: Approved.**

**R4-2209929 TP to TR 38.717-02-01 Addition of CA\_n38-n40**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Telefonica*

**Decision: Revised to R4-2210397 (from R4-2209929).**

**R4-2210397 TP to TR 38.717-02-01 Addition of CA\_n38-n40**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Telefonica*

**Decision: Approved.**

**R4-2209932 draftCR 38.101-1 Addition of CA\_n41A-n77C**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Endorsed.**

**R4-2209933 draftCR 38.101-1 Addition of CA\_n41A-n78C**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Endorsed.**

**R4-2209934 TP to TR 38.717-02-01 Addition of CA\_n40-n77**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2210398 (from R4-2209934).**

**R4-2210398 TP to TR 38.717-02-01 Addition of CA\_n40-n77**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Noted.**

**R4-2209935 draftCR 38.101-1 Addition of CA\_n40A-n78C**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2210399 (from R4-2209935).**

**R4-2210399 draftCR 38.101-1 Addition of CA\_n40A-n78C**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Endorsed.**

**R4-2209936 TP to TR 38.717-02-01 Addition of CA\_n7-n40**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2210748 (from R4-2209936).**

**R4-2210748 TP to TR 38.717-02-01 Addition of CA\_n7-n40**

*Type: pCR For: Approval  
 38.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

#### 8.5.3 NR inter band CA requirements with at least one FR2 band

**R4-2207703 draft CR 38.101-3 to add new NR CA 2DL/1UL combinations**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Charter Communications, Inc*

**Decision: Revised to R4-2210400 (from R4-2207703).**

**R4-2210400 draft CR 38.101-3 to add new NR CA 2DL/1UL combinations**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Charter Communications, Inc*

**Decision: Endorsed.**

**R4-2207830 Draft CR for TS 38.101-3: Support of n77(2A) and n258D/G/H/I in CA\_n77-n258**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2207831 Draft CR for TS 38.101-3: Addition of UL configurations in CA\_n79-n258**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2207934 DraftCR 38.101-3: Addition of FR1+FR2 combos**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Verizon, ZTE, Samsung*

**Decision: Endorsed.**

**R4-2208339 draft CR for CA\_n8-n257, DC\_n8-n257**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: CHTTL*

**Decision: Revised to R4-2210401 (from R4-2208339).**

**R4-2210401 draft CR for CA\_n8-n257, DC\_n8-n257**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: CHTTL*

**Decision: Endorsed.**

**R4-2209276 Draft CR for 38.101-3 to add configuration CA\_n3A-n257JkLM**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209277 Draft CR for 38.101-3 to add configuration CA\_n3B-n258AGHIJkLM and CA\_n3(2A)-n258AGHIJkLM**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209278 Draft CR for 38.101-3 to add configuration CA\_n7A-n257AGHIJkLM**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209279 Draft CR for 38.101-3 to add configuration CA\_n79A-n257JkLM**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209280 Draft CR for 38.101-3 to add configuration CA\_n79A-n258M**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209281 Draft CR for 38.101-3 to add configuration CA\_n38A-n257AGHIJkLM**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209282 Draft CR for 38.101-3 to add configuration CA\_n38A-n258AGHIJkLM**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209574 draft CR 38.101-2 on correction in 2DL NR CA configuration table**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

draft CR 38.101-2 on correction in 2DL NR CA configuration table

**Decision: Endorsed.**

**R4-2209575 draft CR 38.101-3 on corrections in 2DL NR CA configuration table**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

draft CR 38.101-3 on corrections in 2DL NR CA configuration table

**Decision: Endorsed.**

**R4-2209618 Draft CR for TS 38.101-3 to add configurations CA\_n3A-n257(2A) and DC\_n3A-n257(2A)**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2209619 Draft CR for TS 38.101-3 to add configurations CA\_n3A-n258(2A) and DC\_n3A-n258(2A)**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2209620 Draft CR for TS 38.101-3 to add configurations CA\_n78A-n257(2A) and DC\_n78A-n257(2A)**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2209621 Draft CR for TS 38.101-3 to add configurations CA\_n78A-n258(2A) and DC\_n78A-n258(2A)**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2210051 Draft CR for 38.101-3: Consolidation of DC\_n41-n66-n260**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: T-Mobile USA Inc.*

**Decision: Revised to R4-2210402 (from R4-2210051).**

**R4-2210402 Draft CR for 38.101-3: Consolidation of DC\_n41-n66-n260**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: T-Mobile USA Inc.*

**Decision: Endorsed.**

### 8.6 NR Inter-band Carrier Aggregation for 3 bands DL with 1 band UL

#### 8.6.1 Rapporteur Input (WID/TR/CR)

**R4-2208238 TR 38.717-03-01 on Rel-17 NR inter-band Carrier Aggregation (CA) for 3 Down Link (DL) / 1 Up Link (UL) v.0.8.0**

*Type: draft TR For: Agreement  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: CATT*

**Decision:** The document was **for email approval**.

**R4-2208239 Revised WID on Rel-17 NR inter-band CA of 3DL bands and 1UL band**

*Type: WID revised For: Endorsement  
 Source: CATT*

**Decision:** The document was **for email approval**.

**R4-2208240 CR on Introducing NR inter-band CA for 3DL Bands and 1UL band for 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1064 rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision:** The document was **for email approval**.

**R4-2208241 CR on Introducing NR inter-band CA for 3DL Bands and 1UL band for 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0714 rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision:** The document was **for email approval**.

#### 8.6.2 UE RF requirements

**R4-2207745 Draft CR for 38.101-1 to introduce new configurations for NR inter-band CA 3 bands DL with 1 band UL**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: KDDI Corporation*

**Decision: Endorsed.**

**R4-2207834 Draft CR for TS 38.101-3: Support of n77 intra-band non-contiguous CA in CA\_n28-n77-n257 and CA\_n41-n77-n257**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2207847 TP for TR 38.717-03-01: NR CA\_n77-n79-n258**

*Type: pCR For: (not specified)  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2208306 TP for TR 38.717-03-01: support of CA\_n8-n78-n257**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: CHTTL*

**Decision: Approved.**

**R4-2208434 Draft CR for 38.101-1 to introduce new configurations for NR inter-band CA 3 bands DL with 1 band UL**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Samsung, KDDI*

**Decision: Endorsed.**

**R4-2208439 TP for TR 38.717-03-01 CA\_n5-n40-n78**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Approved.**

**R4-2208699 TP for TR38.717-03-01\_CA\_n3A-n8A-n41A**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2208700 TP for TR38.717-03-01\_CA\_n3A-n8A-n79A**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2208701 TP for TR38.717-03-01\_CA\_n8A-n39A-n79A**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2208702 TP for TR38.717-03-01\_CA\_n28A-n39A-n40A**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2208703 TP for TR38.717-03-01\_CA\_n28A-n39A-n41**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2208704 TP for TR38.717-03-01\_CA\_n28A-n39A-n79A**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2209288 TP for 38.717-03-01 CA\_n1A-n28A-n38A**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209289 Draft CR for 38.101-1 to add configuration CA\_n1A-n28A-n78A\_BCS2**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209290 TP for 38.717-03-01 CA\_n1A-n38A-n78A**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209291 TP for 38.717-03-01 CA\_n28A-n38A-n78A**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209292 Draft CR for 38.101-1 to add configuration CA\_n1A-n3B-n7A CA\_n1A-n3(2A)-n7A CA\_n1(2A)-n3A-n7A CA\_n1(2A)-n3B-n7A and CA\_n1(2A)-n3(2A)-n7A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209293 TP for 38.717-03-01 CA\_n1A-n7A-n79A CA\_n1(2A)-n7A-n79A CA\_n1A-n7A-n79C and CA\_n1(2A)-n7A-n79C**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209930 TP to TR 38.717-03-01 Addition of CA\_n3-n38-n40**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Telefonica*

**Decision: Approved.**

**R4-2209931 TP to TR 38.717-03-01 Addition of CA\_n8-n38-n40**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Telefonica*

**Decision: Approved.**

**R4-2209937 TP to TR 38.717-03-01 Addition of CA\_n1-n7-n40**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209938 TP to TR 38.717-03-01 Addition of CA\_n1-n8-n40**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209939 TP to TR 38.717-03-01 Addition of CA\_n7-n8-n40**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209940 TP to TR 38.717-03-01 Addition of CA\_n8-n40-n78**

*Type: pCR For: Approval  
 38.717-03-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

### 8.7 NR Inter-band Carrier Aggregation for 4 bands DL with 1 band UL

#### 8.7.1 Rapporteur Input (WID/TR/CR)

**R4-2209544 Revised WID 4DL/1UL NR CA Rel-17**

*Type: WID revised For: Endorsement  
 Source: Ericsson*

**Abstract:**

Revised WID 4DL/1UL NR CA Rel-17

**Decision:** The document was **for email approval**.

**R4-2209549 big CR 38.101-1 new combinations NR CA Inter-band 4DL/1UL**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1104 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

big CR 38.101-1 new combinations NR CA Inter-band 4DL/1UL

**Decision:** The document was **for email approval**.

**R4-2209553 TR 38.717-04-01 v0.9.0 Rel-17 NR CA Inter-band 4DL/1UL**

*Type: draft TR For: Agreement  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

TR 38.717-04-01 v0.9.0 Rel-17 NR CA Inter-band 4DL/1UL

**Decision:** The document was **for email approval**.

**R4-2209569 draft CR converting 38.101-1 4DL configuration table into new table format**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

draft CR converting 38.101-1 4DL configuration table into new table format

**Decision: Endorsed.**

#### 8.7.2 UE RF requirements

**R4-2207837 Draft CR for TS 38.101-3: Support of n77(3A) in CA\_n3-n28-n77-n257**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2207838 Draft CR for TS 38.101-3: Support of n257H/I in CA\_n28-n41-n77-n257**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2207849 TP for TR 38.717-04-01: CA\_n1-n3-n41-n257**

*Type: pCR For: (not specified)  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2207850 TP for TR 38.717-04-01: CA\_n1-n28-n41-n257**

*Type: pCR For: (not specified)  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2207851 TP for TR 38.717-04-01: CA\_n1-n41-n77-n257**

*Type: pCR For: (not specified)  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2208312 TP for TR 38.717-04-01: support of CA\_n1-n8-n78-n257**

*Type: pCR For: Approval  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: CHTTL*

**Decision: Approved.**

**R4-2208436 Draft CR for 38.101-1 to introduce new configurations for NR inter-band CA 4 bands DL with 1 band UL**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Samsung, KDDI*

**Decision: Endorsed.**

**R4-2209947 TP to TR 38.717-04-01 Addition of CA\_n1-n7-n8-n40**

*Type: pCR For: Approval  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209948 TP to TR 38.717-04-01 Addition of CA\_n1-n7-n8-n78**

*Type: pCR For: Approval  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209949 TP to TR 38.717-04-01 Addition of CA\_n1-n7-n40-n78**

*Type: pCR For: Approval  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209950 TP to TR 38.717-04-01 Addition of CA\_n1-n8-n40-n78**

*Type: pCR For: Approval  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209951 TP to TR 38.717-04-01 Addition of CA\_n7-n8-n40-n78**

*Type: pCR For: Approval  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209977 TP for 38.717-04-01 to introduce CA\_n2A-n12A-n30A-n77A**

*Type: pCR For: Approval  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Approved.**

**R4-2209978 TP for 38.717-04-01 to introduce CA\_n2A-n12A-n66A-n77A**

*Type: pCR For: Approval  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Approved.**

**R4-2209979 TP for 38.717-04-01 to introduce CA\_n2A-n29A-n30A-n77A**

*Type: pCR For: Approval  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Approved.**

**R4-2209980 TP for 38.717-04-01 to introduce CA\_n2A-n29A-n66A-n77A**

*Type: pCR For: Approval  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Approved.**

**R4-2209981 TP for 38.717-04-01 to introduce CA\_n12A-n30A-n66A-n77A**

*Type: pCR For: Approval  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Approved.**

**R4-2209982 TP for 38.717-04-01 to introduce CA\_n29A-n30A-n66A-n77A**

*Type: pCR For: Approval  
 38.717-04-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Approved.**

### 8.8 NR Inter-band Carrier Aggregation/Dual connectivity for 3 bands DL with 2 bands UL

#### 8.8.1 Rapporteur Input (WID/TR/CR)

**R4-2209036 Draft TR 38.717-03-02 v0.9.0**

*Type: draft TR For: Endorsement  
 38.717-02-01 v0.9.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Wistron Telecom AB*

**Decision:** The document was **for email approval**.

**R4-2209635 Revised WID on Rel-17 NR Inter-band Carrier AggregationDual Connectivity for 3 bands DL with 2 bands UL, ZTE Corporation**

*Type: WID revised For: Approval  
 Source: ZTE Corporation*

**Decision:** The document was **for email approval**.

**R4-2209636 Big 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: Approval  
 38.101-1 v17.5.0 CR-1105 rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision:** The document was **for email approval**.

**R4-2209637 Big 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: Approval  
 38.101-3 v17.5.0 CR-0727 rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision:** The document was **for email approval**.

#### 8.8.2 UE RF requirements

**R4-2207746 Draft CR for 38.101-1 to introduce new configurations for NR inter-band CA 3 bands DL with 2 bands UL**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: KDDI Corporation*

**Decision: Revised to R4-2210404 (from R4-2207746).**

**R4-2210404 Draft CR for 38.101-1 to introduce new configurations for NR inter-band CA 3 bands DL with 2 bands UL**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: KDDI Corporation*

**Decision: Endorsed.**

**R4-2207833 Draft CR for TS 38.101-3: Support of n77(3A) in CA\_n3-n77-n257 and CA\_n28-n77-n257**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2207845 TP for TR 38.717-03-02: CA\_n3-n41-n257**

*Type: pCR For: (not specified)  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Revised to R4-2210405 (from R4-2207845).**

**R4-2210405 TP for TR 38.717-03-02: CA\_n3-n41-n257**

*Type: pCR For: (not specified)  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2207846 TP for TR 38.717-03-02: CA\_n28-n41-n257**

*Type: pCR For: (not specified)  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Revised to R4-2210406 (from R4-2207846).**

**R4-2210406 TP for TR 38.717-03-02: CA\_n28-n41-n257**

*Type: pCR For: (not specified)  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2207860 TP update for TR 38.717-03-02: CA\_n3-n28-n41**

*Type: pCR For: (not specified)  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp., ZTE Corporation*

**Decision: Approved.**

**R4-2207928 DraftCR 38.101-3 Addition of Missing DL and UL configurations for NR CA and NR-DC Combinations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

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

**R4-2207929 TP for TR 38.717-03-02: CA/DC\_n5-n66-n261**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Approved.**

**R4-2207930 TP for TR 38.717-03-02: CA/DC\_n2-n66-n261**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Approved.**

**R4-2207931 TP for TR 38.717-03-02: CA/DC\_n2-n5-n261**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Approved.**

**R4-2208435 Draft CR for 38.101-1 to introduce new configurations for NR inter-band CA 3 bands DL with 2 bands UL**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Samsung, KDDI*

**Decision: Endorsed.**

**R4-2208440 TP for TR 38.717-03-02 CA\_n5-n40-n78**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Approved.**

**R4-2208563 DraftCR for 38.101-3: BCS1 for CA\_n66-n77-n260**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Decision: Revised to R4-2210407 (from R4-2208563).**

**R4-2210407 DraftCR for 38.101-3: BCS1 for CA\_n66-n77-n260**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Decision: Endorsed.**

**R4-2208688 Draft CR to TS38.101-1: CA\_n28A-n41C-n79A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2208705 TP for TR38.717-03-02\_CA\_n1A-n8A-n78A**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation, CHTTL*

**Decision: Approved.**

**R4-2208706 TP for TR38.717-03-02\_CA\_n28A-n39A-n41**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2209565 draft CR 38.101-3 to add new NR CA 3DL 2UL combinations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, AT&T*

**Abstract:**

draft CR 38.101-3 to add new NR CA 3DL 2UL combinations

**Decision: Revised to R4-2210408 (from R4-2209565).**

**R4-2210408 draft CR 38.101-3 to add new NR CA 3DL 2UL combinations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, AT&T*

**Abstract:**

draft CR 38.101-3 to add new NR CA 3DL 2UL combinations

**Decision: Endorsed.**

**R4-2209566 draft CR 38.101-3 to add new NR DC 3DL 2UL combinations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, AT&T*

**Abstract:**

draft CR 38.101-3 to add new NR DC 3DL 2UL combinations

**Decision: Noted.**

**R4-2209572 draft CR 38.101-1 on corrections in 3DL NR CA configuration table**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

draft CR 38.101-1 on corrections in 3DL NR CA configuration table

**Decision: Endorsed.**

**R4-2209576 draft CR 38.101-3 on corrections in 3DL NR CA configuration table**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

draft CR 38.101-3 on corrections in 3DL NR CA configuration table

**Decision: Endorsed.**

**R4-2209941 TP to TR 38.717-03-02 Addition of CA\_n1-n7-n8**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209942 TP to TR 38.717-03-02 Addition of CA\_n1-n7-n40**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209943 TP to TR 38.717-03-02 Addition of CA\_n1-n8-n40**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209944 TP to TR 38.717-03-02 Addition of CA\_n7-n8-n40**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209945 TP to TR 38.717-03-02 Addition of CA\_n7-n8-n78**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209946 TP to TR 38.717-03-02 Addition of CA\_n8-n40-n78**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2210403 (from R4-2209946).**

**R4-2210403 TP to TR 38.717-03-02 Addition of CA\_n8-n40-n78**

*Type: pCR For: Approval  
 38.717-03-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209964 draftCR 38.101-1 Addition of DC\_n1A-n7A-n78A**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, BT*

**Decision: Endorsed.**

**R4-2209965 draftCR 38.101-1 Addition of DC\_n7-n46-n78**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, BT*

**Decision: Endorsed.**

**R4-2209971 draftCR to add configurations for CA\_n2-n5-n66 to 38.101-1**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Endorsed.**

**R4-2209973 draftCR to add configurations for CA\_n2-n14-n66 to 38.101-1**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Endorsed.**

**R4-2209974 draftCR to add configurations for CA\_n2-n30-n66 to 38.101-1**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Endorsed.**

**R4-2209975 draftCR to add configurations for CA\_n5-n30-n66 to 38.101-1**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Endorsed.**

**R4-2209976 draftCR to add configurations for CA\_n14-n30-n66 to 38.101-1**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Endorsed.**

**R4-2210041 DraftCR 38.101-3 Addition of Missing UL configurations for NR CA and NR-DC Combinations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Endorsed.**

**R4-2210070 draftCR 38.101-1 to add CA\_n25A-n41A-n66A, CA\_n25A-n41A-n66(2A), CA\_n25A-n41C-n66A, CA\_n25A-n41(2A)-n66A, CA\_n25(2A)-n41A-n66A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n25A-n41A-n66A, CA\_n25A-n41A-n66(2A), CA\_n25A-n41C-n66A, CA\_n25A-n41(2A)-n66A, CA\_n25(2A)-n41A-n66A

**Decision: Endorsed.**

**R4-2210409 draftCR 38.101-1 to add CA\_n25A-n41A-n66A, CA\_n25A-n41A-n66(2A), CA\_n25A-n41C-n66A, CA\_n25A-n41(2A)-n66A, CA\_n25(2A)-n41A-n66A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n25A-n41A-n66A, CA\_n25A-n41A-n66(2A), CA\_n25A-n41C-n66A, CA\_n25A-n41(2A)-n66A, CA\_n25(2A)-n41A-n66A

**Decision: Withdrawn.**

**R4-2210071 draftCR 38.101-1 to add CA\_n25A-n41A-n71A, CA\_n25A-n41A-n71B, CA\_n25A-n41A-n71(2A), CA\_n25A-n41C-n71A, CA\_n25A-n41(2A)-n71A, CA\_n25(2A)-n41A-n71A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n25A-n41A-n71A, CA\_n25A-n41A-n71B, CA\_n25A-n41A-n71(2A), CA\_n25A-n41C-n71A, CA\_n25A-n41(2A)-n71A, CA\_n25(2A)-n41A-n71A

**Decision: Endorsed.**

**R4-2210410 draftCR 38.101-1 to add CA\_n25A-n41A-n71A, CA\_n25A-n41A-n71B, CA\_n25A-n41A-n71(2A), CA\_n25A-n41C-n71A, CA\_n25A-n41(2A)-n71A, CA\_n25(2A)-n41A-n71A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n25A-n41A-n71A, CA\_n25A-n41A-n71B, CA\_n25A-n41A-n71(2A), CA\_n25A-n41C-n71A, CA\_n25A-n41(2A)-n71A, CA\_n25(2A)-n41A-n71A

**Decision: Withdrawn.**

**R4-2210072 draftCR 38.101-1 to add CA\_n25A-n41A-n77A,CA\_n25A-n41A-n77(2A), CA\_n25A-n41C-n77A, CA\_n25A-n41(2A)-n77A, CA\_n25(2A)-n41A-n77A, CA\_n25A-n41(2A)-n77(2A), CA\_n25A-n41C-n77(2A)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n25A-n41A-n77A,CA\_n25A-n41A-n77(2A), CA\_n25A-n41C-n77A, CA\_n25A-n41(2A)-n77A, CA\_n25(2A)-n41A-n77A, CA\_n25A-n41(2A)-n77(2A), CA\_n25A-n41C-n77(2A)

**Decision: Endorsed.**

**R4-2210411 draftCR 38.101-1 to add CA\_n25A-n41A-n77A,CA\_n25A-n41A-n77(2A), CA\_n25A-n41C-n77A, CA\_n25A-n41(2A)-n77A, CA\_n25(2A)-n41A-n77A, CA\_n25A-n41(2A)-n77(2A), CA\_n25A-n41C-n77(2A)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n25A-n41A-n77A,CA\_n25A-n41A-n77(2A), CA\_n25A-n41C-n77A, CA\_n25A-n41(2A)-n77A, CA\_n25(2A)-n41A-n77A, CA\_n25A-n41(2A)-n77(2A), CA\_n25A-n41C-n77(2A)

**Decision: Withdrawn.**

**R4-2210073 draftCR 38.101-1 to add CA\_n25A-n66A-n71A, CA\_n25A-n66A-n71B, CA\_n25A-n66A-n71(2A), CA\_n25A-n66(2A)-n71A, CA\_n25(2A)-n66A-n71A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n25A-n66A-n71A, CA\_n25A-n66A-n71B, CA\_n25A-n66A-n71(2A), CA\_n25A-n66(2A)-n71A, CA\_n25(2A)-n66A-n71A

**Decision: Endorsed.**

**R4-2210412 draftCR 38.101-1 to add CA\_n25A-n66A-n71A, CA\_n25A-n66A-n71B, CA\_n25A-n66A-n71(2A), CA\_n25A-n66(2A)-n71A, CA\_n25(2A)-n66A-n71A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n25A-n66A-n71A, CA\_n25A-n66A-n71B, CA\_n25A-n66A-n71(2A), CA\_n25A-n66(2A)-n71A, CA\_n25(2A)-n66A-n71A

**Decision: Withdrawn.**

**R4-2210074 draftCR 38.101-1 to add CA\_n25A-n66A-n77A, CA\_n25A-n66A-n77(2A), CA\_n25A-n66(2A)-n77A, CA\_n25(2A)-n66A-n77A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n25A-n66A-n77A, CA\_n25A-n66A-n77(2A), CA\_n25A-n66(2A)-n77A, CA\_n25(2A)-n66A-n77A

**Decision: Endorsed.**

**R4-2210413 draftCR 38.101-1 to add CA\_n25A-n66A-n77A, CA\_n25A-n66A-n77(2A), CA\_n25A-n66(2A)-n77A, CA\_n25(2A)-n66A-n77A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n25A-n66A-n77A, CA\_n25A-n66A-n77(2A), CA\_n25A-n66(2A)-n77A, CA\_n25(2A)-n66A-n77A

**Decision: Withdrawn.**

**R4-2210075 draftCR 38.101-1 to add CA\_n25A-n71A-n77A, CA\_n25A-n71B-n77A, CA\_n25A-n71(2A)-n77A, CA\_n25(2A)-n71A-n77A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n25A-n71A-n77A, CA\_n25A-n71B-n77A, CA\_n25A-n71(2A)-n77A, CA\_n25(2A)-n71A-n77A

**Decision: Endorsed.**

**R4-2210414 draftCR 38.101-1 to add CA\_n25A-n71A-n77A, CA\_n25A-n71B-n77A, CA\_n25A-n71(2A)-n77A, CA\_n25(2A)-n71A-n77A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n25A-n71A-n77A, CA\_n25A-n71B-n77A, CA\_n25A-n71(2A)-n77A, CA\_n25(2A)-n71A-n77A

**Decision: Withdrawn.**

**R4-2210076 draftCR 38.101-1 to add CA\_n41A-n66A-n71A, CA\_n41A-n66A-n71B, CA\_n41A-n66A-n71(2A),CA\_n41A-n66(2A)-n71A, CA\_n41C-n66A-n71A, CA\_n41(2A)-n66A-n71A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n41A-n66A-n71A, CA\_n41A-n66A-n71B, CA\_n41A-n66A-n71(2A),CA\_n41A-n66(2A)-n71A, CA\_n41C-n66A-n71A, CA\_n41(2A)-n66A-n71A

**Decision: Endorsed.**

**R4-2210415 draftCR 38.101-1 to add CA\_n41A-n66A-n71A, CA\_n41A-n66A-n71B, CA\_n41A-n66A-n71(2A),CA\_n41A-n66(2A)-n71A, CA\_n41C-n66A-n71A, CA\_n41(2A)-n66A-n71A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n41A-n66A-n71A, CA\_n41A-n66A-n71B, CA\_n41A-n66A-n71(2A),CA\_n41A-n66(2A)-n71A, CA\_n41C-n66A-n71A, CA\_n41(2A)-n66A-n71A

**Decision: Withdrawn.**

**R4-2210077 draftCR 38.101-1 to add CA\_n41A-n66A-n77A, CA\_n41A-n66A-n77(2A),CA\_n41A-n66(2A)-n77A, CA\_n41A-n66(2A)-n77(2A), CA\_n41C-n66A-n77A, CA\_n41(2A)-n66A-n77A, CA\_n41(2A)-n66A-n77(2A), CA\_n41C-n66A-n77(2A)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n41A-n66A-n77A, CA\_n41A-n66A-n77(2A),CA\_n41A-n66(2A)-n77A, CA\_n41A-n66(2A)-n77(2A), CA\_n41C-n66A-n77A, CA\_n41(2A)-n66A-n77A, CA\_n41(2A)-n66A-n77(2A), CA\_n41C-n66A-n77(2A)

**Decision: Endorsed.**

**R4-2210416 draftCR 38.101-1 to add CA\_n41A-n66A-n77A, CA\_n41A-n66A-n77(2A),CA\_n41A-n66(2A)-n77A, CA\_n41A-n66(2A)-n77(2A), CA\_n41C-n66A-n77A, CA\_n41(2A)-n66A-n77A, CA\_n41(2A)-n66A-n77(2A), CA\_n41C-n66A-n77(2A)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n41A-n66A-n77A, CA\_n41A-n66A-n77(2A),CA\_n41A-n66(2A)-n77A, CA\_n41A-n66(2A)-n77(2A), CA\_n41C-n66A-n77A, CA\_n41(2A)-n66A-n77A, CA\_n41(2A)-n66A-n77(2A), CA\_n41C-n66A-n77(2A)

**Decision: Withdrawn.**

**R4-2210078 draftCR 38.101-1 to add CA\_n41A-n71A-n77A, CA\_n41A-n71A-n77(2A), CA\_n41A-n71B-n77A, CA\_n41A-n71(2A)-n77A, CA\_n41C-n71A-n77A, CA\_n41(2A)-n71A-n77A, CA\_n41C-n71A-n77(2A), CA\_n41(2A)-n71A-n77(2A)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n41A-n71A-n77A, CA\_n41A-n71A-n77(2A), CA\_n41A-n71B-n77A, CA\_n41A-n71(2A)-n77A, CA\_n41C-n71A-n77A, CA\_n41(2A)-n71A-n77A, CA\_n41C-n71A-n77(2A), CA\_n41(2A)-n71A-n77(2A)

**Decision: Endorsed.**

**R4-2210417 draftCR 38.101-1 to add CA\_n41A-n71A-n77A, CA\_n41A-n71A-n77(2A), CA\_n41A-n71B-n77A, CA\_n41A-n71(2A)-n77A, CA\_n41C-n71A-n77A, CA\_n41(2A)-n71A-n77A, CA\_n41C-n71A-n77(2A), CA\_n41(2A)-n71A-n77(2A)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n41A-n71A-n77A, CA\_n41A-n71A-n77(2A), CA\_n41A-n71B-n77A, CA\_n41A-n71(2A)-n77A, CA\_n41C-n71A-n77A, CA\_n41(2A)-n71A-n77A, CA\_n41C-n71A-n77(2A), CA\_n41(2A)-n71A-n77(2A)

**Decision: Withdrawn.**

**R4-2210079 draftCR 38.101-1 to add CA\_n66A-n71A-n77A, CA\_n66A-n71A-n77(2A), CA\_n66A-n71B-n77A, CA\_n66A-n71(2A)-n77A, CA\_n66(2A)-n71A-n77A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n66A-n71A-n77A, CA\_n66A-n71A-n77(2A), CA\_n66A-n71B-n77A, CA\_n66A-n71(2A)-n77A, CA\_n66(2A)-n71A-n77A

**Decision: Endorsed.**

**R4-2210418 draftCR 38.101-1 to add CA\_n66A-n71A-n77A, CA\_n66A-n71A-n77(2A), CA\_n66A-n71B-n77A, CA\_n66A-n71(2A)-n77A, CA\_n66(2A)-n71A-n77A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draftCR 38.101-1 to add CA\_n66A-n71A-n77A, CA\_n66A-n71A-n77(2A), CA\_n66A-n71B-n77A, CA\_n66A-n71(2A)-n77A, CA\_n66(2A)-n71A-n77A

**Decision: Withdrawn.**

**R4-2210153 Draft CR to TS 38.101-1 V17.5.0 on removing CBW in NRCA band combination that are missing in lower fallbacks**

*Type: draftCR For: Agreement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Removing CBW in NRCA band combination channel configurations that are missing in lower fallbacks

**Decision: Endorsed.**

### 8.9 NR inter-band Carrier Aggregation and Dual connectivity for DL 4 bands and 2UL bands

#### 8.9.1 Rapporteur Input (WID/TR/CR)

**R4-2208428 TR 38.717-04-02 update version 0.9.0**

*Type: draft TR For: Agreement  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Samsung*

**Decision:** The document was **for email approval**.

**R4-2208430 Big CR on introduction of completed NR CA/DC combs with 4DL/2UL within FR1**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1066 rev Cat: B (Rel-17)  
  
 Source: Samsung*

**Abstract:**

big CR

**Decision:** The document was **for email approval**.

**R4-2208431 Big CR on introduction of completed NR CA/DC combs with 4DL/2UL including FR2**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0715 rev Cat: B (Rel-17)  
  
 Source: Samsung*

**Abstract:**

big CR

**Decision:** The document was **for email approval**.

**R4-2208432 Revised WID on NR CA/DC with 4DL/2UL**

*Type: WID revised For: Information  
 Source: Samsung*

**Decision:** The document was **for email approval**.

#### 8.9.2 UE RF requirements

**R4-2207840 Draft CR for TS 38.101-1: Support of DC\_n1-n3-n28-n77/79, DC\_n1-n3/28-n77-n79, DC\_n3-n28-n41-n77 and DC\_n3-n28-77-n79**

*Type: draftCR For: (not specified)  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2208437 Draft CR for 38.101-1 to introduce new configurations for NR inter-band CA 4 bands DL with 2 bands UL**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Samsung, KDDI*

**Decision: Endorsed.**

**R4-2208473 Draft CR for 38.101-3 to change 4DL configuration table into new format**

*Type: draftCR For: Endorsement  
 38.717-04-02 v0.8.0 CR- rev Cat: F (Rel-17)  
  
 Source: Samsung*

**Decision: Endorsed.**

**R4-2209128 DraftCR 38.101-1: CA\_n25-n41-n66-n71 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210424 (from R4-2209128).**

**R4-2210424 DraftCR 38.101-1: CA\_n25-n41-n66-n71 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209129 DraftCR 38.101-1: CA\_n25-n41-n66-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210425 (from R4-2209129).**

**R4-2210425 DraftCR 38.101-1: CA\_n25-n41-n66-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209130 DraftCR 38.101-1: CA\_n25-n41-n71-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210426 (from R4-2209130).**

**R4-2210426 DraftCR 38.101-1: CA\_n25-n41-n71-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209131 DraftCR 38.101-1: CA\_n25-n66-n71-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210427 (from R4-2209131).**

**R4-2210427 DraftCR 38.101-1: CA\_n25-n66-n71-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209132 DraftCR 38.101-1: CA\_n41-n66-n71-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Revised to R4-2210428 (from R4-2209132).**

**R4-2210428 DraftCR 38.101-1: CA\_n41-n66-n71-n77 configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, T-Mobile USA*

**Decision: Endorsed.**

**R4-2209952 TP to TR 38.717-04-02 Addition of CA\_n1-n7-n8-n40**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2210419 (from R4-2209952).**

**R4-2210419 TP to TR 38.717-04-02 Addition of CA\_n1-n7-n8-n40**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209953 TP to TR 38.717-04-02 Addition of CA\_n1-n7-n8-n78**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2210420 (from R4-2209953).**

**R4-2210420 TP to TR 38.717-04-02 Addition of CA\_n1-n7-n8-n78**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209954 TP to TR 38.717-04-02 Addition of CA\_n1-n7-n40-n78**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2210421 (from R4-2209954).**

**R4-2210421 TP to TR 38.717-04-02 Addition of CA\_n1-n7-n40-n78**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209955 TP to TR 38.717-04-02 Addition of CA\_n1-n8-n40-n78**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2210422 (from R4-2209955).**

**R4-2210422 TP to TR 38.717-04-02 Addition of CA\_n1-n8-n40-n78**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209956 TP to TR 38.717-04-02 Addition of CA\_n7-n8-n40-n78**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2210423 (from R4-2209956).**

**R4-2210423 TP to TR 38.717-04-02 Addition of CA\_n7-n8-n40-n78**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia*

**Decision: Approved.**

**R4-2209970 draftCR to add configurations for CA\_n2-n5-n30-n66 to 38.101-1**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Endorsed.**

**R4-2209972 draftCR to add configurations for CA\_n2-n14-n30-n66 to 38.101-1**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Endorsed.**

**R4-2209983 TP for 38.717-04-02 to introduce CA\_n2A-n12A-n30A-n77A**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Approved.**

**R4-2209984 TP for 38.717-04-02 to introduce CA\_n2A-n12A-n66A-n77A**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Approved.**

**R4-2209985 TP for 38.717-04-02 to introduce CA\_n2A-n29A-n30A-n77A**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Approved.**

**R4-2209986 TP for 38.717-04-02 to introduce CA\_n2A-n29A-n66A-n77A**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Approved.**

**R4-2209987 TP for 38.717-04-02 to introduce CA\_n12A-n30A-n66A-n77A**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Approved.**

**R4-2209988 TP for 38.717-04-02 to introduce CA\_n29A-n30A-n66A-n77A**

*Type: pCR For: Approval  
 38.717-04-02 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, AT&T*

**Decision: Approved.**

### 8.10 NR inter-band CA for 5 bands DL with x bands UL (x=1, 2)

#### 8.10.1 Rapporteur Input (WID/TR/CR)

**R4-2209263 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*

**Decision:** The document was **for email approval**.

**R4-2209264 TR 38.717-05-01 v1.0.0**

*Type: draft TR For: Agreement  
 38.717-05-01 v0.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **for email approval**.

**R4-2209265 Big CR on Introduction of completed 5 bands inter-band CA into TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1090 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **for email approval**.

**R4-2209266 Big CR on Introduction of completed 5 bands inter-band CA into TS 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0720 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **for email approval**.

#### 8.10.2 UE RF requirements

**R4-2209573 draft CR 38.101-1 on corrections in 5DL NR CA configuration table**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

draft CR 38.101-1 on corrections in 5DL NR CA configuration table

**Decision: Endorsed.**

### 8.11 DC of 1 LTE band and 1 NR band

#### 8.11.1 Rapporteur Input (WID/TR/CR)

**R4-2207892 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 v17.5.0 CR-0710 rev Cat: B (Rel-17)  
  
 Source: CHTTL*

**Decision:** The document was **for email approval**.

**R4-2207893 TR 37.717-11-11 v1.2.0 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 v1.1.0 CR- rev Cat: (Rel-17)  
  
 Source: CHTTL*

**Decision:** The document was **for email approval**.

**R4-2207903 Revised WID for Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL)**

*Type: WID revised For: Approval  
 Source: CHTTL*

**Decision:** The document was **for email approval**.

**R4-2208284 CR for release independent of Rel.17 NE-DC FR1 and FR2 combinations**

*Type: CR For: Agreement  
 38.307 v17.5.0 CR-0098 rev Cat: B (Rel-17)  
  
 Source: CHTTL, CMCC, SGS Wireless, Samsung*

**Decision: Agreed.**

**R4-2209567 draft CR 38.101-3 to add DC\_1\_n7 configuration**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, BT plc*

**Abstract:**

draft CR 38.101-3 to add DC\_1\_n7 configuration

**Decision: Endorsed.**

#### 8.11.2 EN-DC requirements without FR2 band

**R4-2207727 DraftCR 38.101-3 Addition of 1 Band LTE and 1 Band NR EN-DC Combinations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Endorsed.**

**R4-2207859 TP update for TR 37.717-11-11: DC\_41\_n1**

*Type: pCR For: (not specified)  
 37.717-11-11 v1.1.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2210365 TP update for TR 37.717-11-11: DC\_41\_n1**

*Type: pCR For: (not specified)  
 37.717-11-11 v1.1.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Withdrawn.**

**R4-2209570 TP for TR 37.717-11-11 to correct DC\_2\_n25**

*Type: pCR For: Approval  
 37.717-11-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

TP for TR 37.717-11-11 to correct DC\_2\_n25

**Decision: Approved.**

**R4-2209926 TP for 37.717-11-11 to introduce DC\_71\_n77**

*Type: pCR For: Approval  
 37.717-11-11 v1.1.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, US Cellular*

**Decision: Revised to R4-2210366 (from R4-2209926).**

**R4-2210366 TP for 37.717-11-11 to introduce DC\_71\_n77**

*Type: pCR For: Approval  
 37.717-11-11 v1.1.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, US Cellular*

**Decision: Approved.**

**R4-2209966 draftCR 38.101-3 Addition of DC\_1A\_n7A-n782A**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, BT*

**Decision: Endorsed.**

**R4-2210357 TP for TR 37.717-11-11 for DC\_48\_n2**

*Type: pCR For: Approvalt  
 37.717-11-11 v1.1.0 CR- rev Cat: (Rel-17)  
  
 Source: Verizon*

**Decision: Approved.**

#### 8.11.3 EN-DC requirements with FR2 band

**R4-2207832 Draft CR for TS 38.101-3: Support of UL DC\_28A\_n257D in DC\_28\_n257**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2209561 draft CR 38.101-3 to add DC\_14\_n258**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, AT&T*

**Abstract:**

draft CR 38.101-3 to add DC\_14\_n258

**Decision: Endorsed.**

**R4-2209562 draft CR 38.101-3 to add DC\_30\_n258**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, AT&T*

**Abstract:**

draft CR 38.101-3 to add DC\_30\_n258

**Decision: Endorsed.**

**R4-2209622 Draft CR for TS 38.101-3 to add EN-DC configuration DC\_1A\_n257(2A)**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2209623 Draft CR for TS 38.101-3 to add EN-DC configuration DC\_1A\_n258(2A)**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2209624 Draft CR for TS 38.101-3 to add EN-DC configuration DC\_7A\_n257(2A)**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2209625 Draft CR for TS 38.101-3 to add EN-DC configuration DC\_7A\_n258(2A)**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2210069 draft CR 38101-3 to add DC\_26A\_n258A-M**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, Telstra*

**Abstract:**

draft CR 38101-3 to add DC\_26A\_n258A-M

**Decision: Withdrawn.**

### 8.12 DC of 2 LTE band and 1 NR band

#### 8.12.1 Rapporteur Input (WID/TR/CR)

**R4-2208558 TR 37.717-21-11 V0.9.0 for DC of 2 LTE band and 1 NR band**

*Type: draft TR For: Agreement  
 37.717-21-11 v0.9.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **for email approval**.

**R4-2208559 CR on introduction of completed DC of 2 bands LTE and 1 band NR from RAN4#103-e into TS 38.101-3**

*Type: WID revised For: Endorsement  
 Source: Huawei, HiSilicon*

**Decision:** The document was **for email approval**.

**R4-2208560 Rel-17 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*

**Decision:** The document was **for email approval**.

#### 8.12.2 EN-DC requirements without FR2 band

**R4-2207715 TP for TR 37.717-21-11 Addition of DC\_2-14\_n5**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Approved.**

**R4-2207718 TP for TR 37.717-21-11 Addition of DC\_14-66\_n5**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Revised to R4-2210747 (from R4-2207718).**

**R4-2210747 TP for TR 37.717-21-11 Addition of DC\_14-66\_n5**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Approved.**

**R4-2207728 DraftCR 38.101-3 Addition of 2 Bands LTE and 1 Band NR EN-DC Combinations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Endorsed.**

**R4-2207765 TP for TR 37.717-21-11: DC\_1-20\_n7**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-21-11 to include DC\_1-20\_n7.

**Decision: Approved.**

**R4-2207835 Draft CR for TS 38.101-3: Correction of DC\_5-7\_n77 and DC\_5-7\_n78**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Noted.**

**R4-2210367 Draft CR for TS 38.101-3: Correction of DC\_5-7\_n77 and DC\_5-7\_n78**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Withdrawn.**

**R4-2207932 TP for TR 37.717-21-11: DC\_48-66\_n2**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Approved.**

**R4-2207933 TP for TR 37.717-21-11: DC\_2-48\_n2**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Revised to R4-2210368 (from R4-2207933).**

**R4-2210368 TP for TR 37.717-21-11: DC\_2-48\_n2**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Approved.**

**R4-2208561 draft CR to 38.101-3: corrections on EN-DC configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210369 (from R4-2208561).**

**R4-2210369 draft CR to 38.101-3: corrections on EN-DC configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209020 TP for TR 37.717-21-11: DC\_32A-38A\_n28A**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209170 TP for TR 37.717-21-11 DC\_3A-38A\_n78A and DC\_3C-38A\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210370 (from R4-2209170).**

**R4-2210370 TP for TR 37.717-21-11 DC\_3A-38A\_n78A and DC\_3C-38A\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209171 TP for TR 37.717-21-11 DC\_8A-32A\_n28A**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209272 Draft CR for 38.101-3 to correct the editorial error for DC\_2A-2A-12A\_n78A**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209571 TP for TR 37.717-21-11 to include DC\_2-7\_n25 (resubmission of R4-2205702)**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

resubmission of R4-2205702 which was approved at RAN4 102 but not captured in big CR

**Decision: Revised to R4-2210371 (from R4-2209571).**

**R4-2210371 TP for TR 37.717-21-11 to include DC\_2-7\_n25 (resubmission of R4-2205702)**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

resubmission of R4-2205702 which was approved at RAN4 102 but not captured in big CR

**Decision: Approved.**

**R4-2209633 TP for TR 37.717-21-11\_DC\_1A-38A\_n7A**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2209634 TP for TR 37.717-21-11\_DC\_3A-38A\_n7A**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2209962 TP to TR 37.717-21-11 Addition of DC\_40A-42A\_n77A**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, NBN*

**Decision: Revised to R4-2210372 (from R4-2209962).**

**R4-2210372 TP to TR 37.717-21-11 Addition of DC\_40A-42A\_n77A**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, NBN*

**Decision: Approved.**

**R4-2209963 TP to TR 37.717-21-11 Addition of DC\_40A-42A\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, NBN*

**Decision: Revised to R4-2210373 (from R4-2209963).**

**R4-2210373 TP to TR 37.717-21-11 Addition of DC\_40A-42A\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, NBN*

**Decision: Approved.**

**R4-2209993 TP for TR 37.717-21-11: DC\_n77A\_1A-3A, DC\_n77(2A)\_1A-3A**

*Type: pCR For: Agreement  
 37.717-21-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei Technologies France*

**Decision: Approved.**

#### 8.12.3 EN-DC requirements with FR2 band

**R4-2210066 draft CR 38101-3 to add DC\_1A-26A\_n258A-M**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, Telstra*

**Abstract:**

draft CR 38101-3 to add DC\_1A-26A\_n258A-M

**Decision: Withdrawn.**

**R4-2210067 draft CR 38101-3 to add DC\_3A-26A\_n258A-M**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, Telstra*

**Abstract:**

draft CR 38101-3 to add DC\_3A-26A\_n258A-M

**Decision: Withdrawn.**

**R4-2210068 draft CR 38101-3 to add DC\_7A-26A\_n258A-M**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, Telstra*

**Abstract:**

draft CR 38101-3 to add DC\_7A-26A\_n258A-M

**Decision: Withdrawn.**

### 8.13 DC of 3 LTE band and 1 NR band

#### 8.13.1 Rapporteur Input (WID/TR/CR)

**R4-2209543 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

**Decision:** The document was **for email approval**.

**R4-2209548 big CR 38.101-3 new combinations LTE 3DL and one NR band**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0725 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

big CR 38.101-3 new combinations LTE 3DL and one NR band

**Decision:** The document was **for email approval**.

**R4-2209552 TR 37.717-31-11 v0.9.0 Rel-17 DC combinations LTE 3DL and one NR band**

*Type: draft TR For: Agreement  
 37.717-31-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

TR 37.717-31-11 v0.9.0 Rel-17 DC combinations LTE 3DL and one NR band

**Decision:** The document was **for email approval**.

#### 8.13.2 EN-DC requirements without FR2 band

**R4-2207719 TP for TR 37.717-31-11 Addition of DC\_2-30-(n)5**

*Type: pCR For: Approval  
 37.717-31-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Approved.**

**R4-2207720 TP for TR 37.717-31-11 Addition of DC\_30-66-(n)5**

*Type: pCR For: Approval  
 37.717-31-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Approved.**

**R4-2207729 DraftCR 38.101-3 Addition of 3 Bands LTE and 1 Band NR EN-DC Combinations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Endorsed.**

**R4-2207940 TP for TR 37.717-31-11: DC\_2-13-66\_n2**

*Type: pCR For: Approval  
 37.717-31-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Approved.**

**R4-2209021 TP for TR 37.717-31-11: DC\_3A-32A-38A\_n28A and DC\_3C-32A-38A\_n28A**

*Type: pCR For: Approval  
 37.717-31-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210374 (from R4-2209021).**

**R4-2210374 TP for TR 37.717-31-11: DC\_3A-32A-38A\_n28A and DC\_3C-32A-38A\_n28A**

*Type: pCR For: Approval  
 37.717-31-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209172 TP for TR 37.717-31-11 DC\_3A-8A-32A\_n28A and DC\_3C-8A-32A\_n28A**

*Type: pCR For: Approval  
 37.717-31-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210375 (from R4-2209172).**

**R4-2210375 TP for TR 37.717-31-11 DC\_3A-8A-32A\_n28A and DC\_3C-8A-32A\_n28A**

*Type: pCR For: Approval  
 37.717-31-11 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

#### 8.13.3 EN-DC requirements with FR2 band

**R4-2209563 draft CR 38.101-3 to add new configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, AT&T*

**Abstract:**

draft CR 38.101-3 to add new configurations

**Decision: Endorsed.**

### 8.14 DC of 4 LTE band and 1 NR band

#### 8.14.1 Rapporteur Input (WID/TR/CR)

**R4-2209919 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 for RAN4#103

**Decision:** The document was **for email approval**.

**R4-2209920 TR 37.717-41-11-110**

*Type: draft TR For: Agreement  
 37.717-41-11 v1.1.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Inclusion of TPs provided at RAN4#103. Presented for information at RAN#95 and will be presented for approval at RAN#96.

**Decision:** The document was **for email approval**.

**R4-2209921 Big CR to introduce new combinations of LTE 4band + NR 1band for TS 38.101-3**

*Type: CR For: Endorsement  
 38.101-3 v17.5.0 CR-0728 rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Inclusion of approved combinations provided at RAN4#103

**Decision:** The document was **for email approval**.

#### 8.14.2 EN-DC requirements without FR2 band

**R4-2207721 TP for TR 37.717-41-11 Addition of DC\_2-30-66-(n)5**

*Type: pCR For: Approval  
 37.717-41-11 v1.0.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Revised to R4-2210376 (from R4-2207721).**

**R4-2210376 TP for TR 37.717-41-11 Addition of DC\_2-30-66-(n)5**

*Type: pCR For: Approval  
 37.717-41-11 v1.0.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Approved.**

**R4-2207841 Draft CR for TS 38.101-3: Support of n77(3A) in DC\_1-3-8-11\_n77**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

#### 8.14.3 EN-DC requirements with FR2 band

**R4-2209564 draft CR 38.101-3 to add new configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, AT&T*

**Abstract:**

draft CR 38.101-3 to add new configurations

**Decision: Endorsed.**

### 8.15 DC of x bands (x=1,2, 3, 4) LTE inter-band CA and 2 bands NR inter-band CA

#### 8.15.1 Rapporteur Input (WID/TR/CR)

**R4-2207632 TR 37.717-11-21 v0.9.0 TR update: LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17**

*Type: draft TR For: Agreement  
 37.717-11-21 v0.9.0 CR- rev Cat: (Rel-17)  
  
 Source: LG Electronics Deutschland*

**Abstract:**

TR0.9.0 to complete LTE (xDL/UL x=1.2,3,4) with NR 2 bands (2DL/1UL) DC in Rel-17

**Decision:** The document was **for email approval**.

**R4-2207633 Revised WID on Rel-17 Dual Connectivity (DC) of x bands (x=1,2,3,4) LTE inter-band CA (xDL/1UL) and 2 bands NR inter-band CA (2DL/1UL)**

*Type: WID revised For: Endorsement  
 Source: LG Electronics Deutschland*

**Abstract:**

revision to change rapporteur and completion date

**Decision:** The document was **for email approval**.

**R4-2207634 Introduction CR on new NR DC LTE(xDL/1UL)+ NR(2DL/1UL) band combinations in Rel-17**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0704 rev Cat: B (Rel-17)  
  
 Source: LG Electronics Deutschland*

**Abstract:**

CR to introduce new LTE (xDL/UL x=1.2,3,4) with NR 2 bands (2DL/1UL) DC band combination in Rel-17

**Decision:** The document was **for email approval**.

**R4-2207645 Introduction CR on new NR DC LTE(xDL/1UL)+ NR(2DL/1UL) band combinations in Rel-17**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0705 rev Cat: B (Rel-17)  
  
 Source: LG Electronics Deutschland*

**Abstract:**

Introduction CR on new NR DC LTE(xDL/1UL)+ NR(2DL/1UL) band combinations in Rel-17

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

#### 8.15.2 EN-DC requirements including NR inter CA without FR2 band

**R4-2207839 Draft CR for TS 38.101-3: Support of n77(2A) in DC\_1-8\_n77-n79**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2207842 Draft CR for TS 38.101-3: Correction of Rib table for DC\_11\_n1-n77 and DC\_8-11\_n77-n79**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2207848 TP for TR 37.717-11-21: EN-DC\_41\_n1-n3**

*Type: pCR For: (not specified)  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2207852 TP for TR 37.717-11-21: EN-DC\_8-11\_n1-n77**

*Type: pCR For: (not specified)  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2207853 TP for TR 37.717-11-21: EN-DC\_8-41\_n1-n3**

*Type: pCR For: (not specified)  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2207854 TP for TR 37.717-11-21: EN-DC\_1-8-11\_n3-n79**

*Type: pCR For: (not specified)  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2207855 TP for TR 37.717-11-21: EN-DC\_1-8-11\_n77-n79**

*Type: pCR For: (not specified)  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2207909 TP for TR 37.717-11-21: DC\_1\_n3-n75**

*Type: pCR For: Approval  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-11-21 to include DC\_1\_n3-n75.

**Decision: Approved.**

**R4-2207910 TP for TR 37.717-11-21: DC\_20\_n7-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-11-21 to include DC\_20\_n7-n78.

**Decision: Revised to R4-2210429 (from R4-2207910).**

**R4-2210429 TP for TR 37.717-11-21: DC\_20\_n7-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-11-21 to include DC\_20\_n7-n78.

**Decision: Approved.**

**R4-2207987 TP for TR 37.717-11-21: DC\_1-20\_n7-n78**

*Type: pCR For: Approval  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-11-21 to include DC\_1-20\_n7-n78.

**Decision: Approved.**

**R4-2208441 TP for TR 38.717-11-21 DC\_3\_n5-n40**

*Type: pCR For: Approval  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Revised to R4-2210430 (from R4-2208441).**

**R4-2210430 TP for TR 38.717-11-21 DC\_3\_n5-n40**

*Type: pCR For: Approval  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Approved.**

**R4-2208696 TP for TR 37.717-11-21: DC\_3A-8A\_n40A-n79**

*Type: pCR For: Approval  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2208838 TP for TR 37.717-11-21: DC\_1A\_n8A-n77A, DC\_1A\_n8A-n77(2A)**

*Type: draft TR For: Approval  
 37.717-11-21 v0.9.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei Technologies France*

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

**R4-2209084 TP for TR 37.717-11-21: DC\_n8A-n77A\_1A, DC\_n8A-n77(2A)\_1A**

*Type: draft TR For: Approval  
 37.717-11-21 v0.9.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei Technologies France*

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

**R4-2209273 Draft CR for 38.101-3 to remove incorrect UL configuration for DC\_1\_n28-n75 and DC\_3\_n28-n75 and add back DC\_3C-20A\_n7A-n28A**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, DT*

**Decision: Revised to R4-2210749 (from R4-2209273).**

**R4-2210749 Draft CR for 38.101-3 to remove incorrect UL configuration for DC\_1\_n28-n75 and DC\_3\_n28-n75 and add back DC\_3C-20A\_n7A-n28A**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, DT*

**Decision: Endorsed.**

**R4-2209274 Draft CR for 38.101-3 to add UL configuration DC\_3C\_n28A and DC\_3C\_n78A for DC\_3C-20A\_n28A-n78A**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, DT*

**Decision: Revised to R4-2210750 (from R4-2209274).**

**R4-2210750 Draft CR for 38.101-3 to add UL configuration DC\_3C\_n28A and DC\_3C\_n78A for DC\_3C-20A\_n28A-n78A**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, DT*

**Decision: Endorsed.**

**R4-2209568 draft CR 38.101-3 to add missing configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, BT plc*

**Abstract:**

draft CR 38.101-3 to add missing configurations

**Decision: Revised to R4-2210751 (from R4-2209568).**

**R4-2210751 draft CR 38.101-3 to add missing configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, BT plc*

**Abstract:**

draft CR 38.101-3 to add missing configurations

**Decision: Endorsed.**

**R4-2209632 TP for TR 37.717-11-21\_DC\_38A\_n7A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2209967 draftCR 38.101-3 Addition of DC\_1A-3C\_n7A-n78A**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, BT*

**Decision: Endorsed.**

**R4-2209968 draftCR 38.101-3 Addition of DC\_3C\_n782A UL config**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, BT*

**Decision: Endorsed.**

**R4-2209969 draftCR 38.101-3 Correction to DC\_3C\_n7A-n782A**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, BT*

**Decision: Endorsed.**

**R4-2210038 TP for TR 37.717-11-21: DC\_n8A-n77A\_1A, DC\_n8A-n77(2A)\_1A**

*Type: pCR For: Agreement  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei Technologies France*

**Decision: Approved.**

**R4-2210043 TP for TR 37.717-11-21: DC\_1A\_n8A-n77A, DC\_1A\_n8A-n77(2A)**

*Type: pCR For: Agreement  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei Technologies France*

**Decision: Approved.**

#### 8.15.3 EN-DC requirements including NR inter CA with FR2 band

**R4-2207836 Draft CR for TS 38.101-3: Support of UL DC\_28A\_n257D in DC\_28\_n77-n257**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2208697 TP for 37.717-11-21: DC\_8A\_n79A-n258A**

*Type: pCR For: Approval  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

**R4-2208841 TP for TR 37.717-11-21: DC\_n77A-n257A/G/H/I/J/K/L/M\_1A, DC\_n77(2A)-n257A/G/H/I/J/K/L/M\_1A**

*Type: draft TR For: Approval  
 37.717-11-21 v0.9.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei Technologies France*

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

**R4-2208877 TP for TR 37.717-11-21: DC\_n77A-n257A/G/H/I/J/K/L/M\_3A, DC\_n77(2A)-n257A/G/H/I/J/K/L/M\_3A**

*Type: draft TR For: Approval  
 37.717-11-21 v0.9.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei Technologies France*

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

**R4-2209083 TP for TR 37.717-11-21: DC\_n8A-n77A\_1A, DC\_n8A-n77(2A)\_1A**

*Type: draft TR For: Approval  
 37.717-11-21 v0.9.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei Technologies France*

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

**R4-2209577 draft CR 38.101-3 on corrections in EN-DC tables**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

draft CR 38.101-3 on corrections in EN-DC tables

**Decision: Endorsed.**

**R4-2209957 draftCR to add DC\_40\_n77-n257 to 38.101-3**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, NBN*

**Decision: Endorsed.**

**R4-2209958 draftCR to add DC\_40-42\_n77-n257 to 38.101-3**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, NBN*

**Decision: Endorsed.**

**R4-2209959 draftCR to add DC\_40-42\_n78-n257 to 38.101-3**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, NBN*

**Decision: Endorsed.**

**R4-2209960 draftCR to add DC\_42\_n77-n257 to 38.101-3**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, NBN*

**Decision: Endorsed.**

**R4-2209961 draftCR to add DC\_42\_n78-n257 to 38.101-3**

*Type: draftCR For: Approval  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, NBN*

**Decision: Endorsed.**

**R4-2209989 TP for TR 37.717-11-21: DC\_n77A-n257A/G/H/I/J/K/L/M\_1A-3A, DC\_n77(2A)-n257A/G/H/I/J/K/L/M\_1A-3A**

*Type: pCR For: Agreement  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei Technologies France*

**Decision: Approved.**

**R4-2210037 TP for TR 37.717-11-21 DC\_n77A-n257A\_3A variants DC\_n77(2A)-n257A\_3A variants**

*Type: pCR For: Agreement  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei Technologies France*

**Decision: Approved.**

**R4-2210058 TP for TR 37.717-11-21: DC\_n77A-n257A/G/H/I/J/K/L/M\_1A, DC\_n77(2A)-n257A/G/H/I/J/K/L/M\_1A**

*Type: pCR For: Agreement  
 37.717-11-21 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei Technologies France*

**Decision: Approved.**

### 8.16 DC of x bands (x=1,2) LTE inter-band CA (xDL/xUL) and y bands (y=3-x) NR inter-band CA

#### 8.16.1 Rapporteur Input (WID/TR/CR)

**R4-2208712 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*

**Decision:** The document was **for email approval**.

**R4-2208713 Big CR to reflect the completed ENDC combinations for 3 bands DL with 3 bands UL into TS 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0717 rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision:** The document was **for email approval**.

**R4-2208714 TR 37.717-33 v0.8.0**

*Type: draft TR For: Agreement  
 37.717-33 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision:** The document was **for email approval**.

#### 8.16.2 UE RF requirements

**R4-2208698 TP for 37.717-33: DC\_8A\_n79A-n258A**

*Type: pCR For: Approval  
 37.717-33 v0.7.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Approved.**

### 8.17 DC of x bands (x=1,2,3) LTE inter-band CA (xDL/1UL) and 3 bands NR inter-band CA (3DL/1UL)

#### 8.17.1 Rapporteur Input (WID/TR/CR)

**R4-2208715 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*

**Decision:** The document was **for email approval**.

**R4-2208716 Big CR to reflect the completed DC of x bands (x=1,2,3) LTE inter-band CA (xDL1UL) and 3 bands NR inter-band CA (3DL1UL) into TS 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0718 rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

**Decision:** The document was **for email approval**.

**R4-2208717 TR 37.717-11-31 v0.8.0**

*Type: draft TR For: Agreement  
 37.717-11-31 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Corporation*

**Decision:** The document was **for email approval**.

#### 8.17.2 UE RF requirements

**R4-2207843 Draft CR for TS 38.101-3: Addition of missing Tib/Rib values for NR 3 bands EN-DC combinations**

*Type: draftCR For: (not specified)  
 38.101-3 v15.17.0 CR- rev Cat: (Rel-15)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2207856 TP for TR 37.717-11-31: EN-DC\_1-11\_n3-n77-n79**

*Type: pCR For: (not specified)  
 37.717-11-31 v0.7.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2207857 TP for TR 37.717-11-31: EN-DC\_8-11\_n3-n77-n79**

*Type: pCR For: (not specified)  
 37.717-11-31 v0.7.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

**R4-2208442 TP for TR 38.717-11-31 DC\_3\_n1-n40-n78**

*Type: pCR For: Approval  
 37.717-11-31 v0.7.0 CR- rev Cat: (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Approved.**

**R4-2208443 TP for TR 38.717-11-31 DC\_3\_n5-n40-n78**

*Type: pCR For: Approval  
 37.717-11-31 v0.7.0 CR- rev Cat: (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Approved.**

### 8.18 DC of x bands (x=1,2,3) LTE inter-band CA (xDL/1UL) and 4 bands NR inter-band CA (4DL/1UL)

#### 8.18.1 Rapporteur Input (WID/TR/CR)

**R4-2209267 Revised WID on Rel-17 Dual Connectivity (DC) of x bands (x=1,2) LTE inter-band CA (xDL1UL) and 4 bands NR inter-band CA (4DL1UL)**

*Type: WID revised For: Endorsement  
 Source: Huawei, HiSilicon*

**Decision:** The document was **for email approval**.

**R4-2209268 Big CR on Introduction of completed Dual Connectivity (DC) of x bands (x=1,2) LTE inter-band CA (xDL1UL) and 4 bands NR inter-band CA (4DL1UL) into TS 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0721 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **for email approval**.

**R4-2209269 TR 37.717-11-41 v1.0.0**

*Type: draft TR For: Agreement  
 37.717-11-41 v0.1.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **for email approval**.

#### 8.18.2 UE RF requirements

**R4-2207844 Draft CR for TS 38.101-3: Addition of missing Tib values in DC\_8\_n3-n28-n77-n79**

*Type: draftCR For: (not specified)  
 38.101-3 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Endorsed.**

**R4-2207858 TP for TR 37.717-11-41: EN-DC\_1-8\_n3-n28-n77-n79**

*Type: pCR For: (not specified)  
 37.717-11-41 v0.1.0 CR- rev Cat: (Rel-17)  
  
 Source: SoftBank Corp.*

**Decision: Approved.**

### 8.19 Band combinations for SA NR supplementary uplink (SUL) NSA NR SUL, NSA NR SUL with UL sharing from the UE perspective (ULSUP)

#### 8.19.1 Rapporteur Input (WID/TR/CR)

**R4-2209260 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*

**Decision:** The document was **for email approval**.

**R4-2209261 TR 37.717-00-00 v1.0.0**

*Type: draft TR For: Agreement  
 37.717-00-00 v0.6.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **for email approval**.

**R4-2209262 Big CR on Introduction of completed SUL band combinations into TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1089 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **for email approval**.

#### 8.19.2 UE RF requirements

**R4-2208853 Draft CR to 38101-1-h50 for SUL general part**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Revised to R4-2210746 (from R4-2208853).**

**R4-2210746 Draft CR to 38101-1-h50 for SUL general part**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Endorsed.**

**R4-2209294 Updated TP for 37.717-00-00 to add SUL configuration SUL\_n79C-n83A for CA\_n28A\_SUL\_n79C-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.6.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, CBN*

**Decision: Approved.**

**R4-2209295 Updated TP for 37.717-00-00 to add SUL configuration SUL\_n41C-n83A for CA\_n28A\_SUL\_n41C-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.6.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, CBN*

**Decision: Approved.**

**R4-2209296 Updated TP for 37.717-00-00 to add SUL configuration SUL\_n79C-n80A for CA\_n3A\_SUL\_n79C-n80A**

*Type: pCR For: Approval  
 37.717-00-00 v0.6.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209297 Updated TP for 37.717-00-00 to add SUL configuration SUL\_n78C-n80A for CA\_n3A\_SUL\_n78C-n80A**

*Type: pCR For: Approval  
 37.717-00-00 v0.6.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209298 Updated TP for 37.717-00-00 to add SUL configuration SUL\_n78C-n84A for CA\_n1A\_SUL\_n78C-n84A**

*Type: pCR For: Approval  
 37.717-00-00 v0.6.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209299 Draft CR for 38.101-1 to add SUL configuration SUL\_n79C-n95A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209300 Draft CR for 38.101-1 to add SUL configuration SUL\_n79C-n80A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209301 Draft CR for 38.101-1 to add SUL configuration SUL\_n41C-n95A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209302 TP for 37.717-00-00 CA\_n28A-n79A\_SUL\_n41A-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.6.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, CBN*

**Decision: Approved.**

**R4-2209303 TP for 37.717-00-00 CA\_n28A-n41A\_SUL\_n79A-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.6.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, CBN*

**Decision: Approved.**

**R4-2209304 TP for 37.717-00-00 CA\_n79A\_SUL\_n41A-n97A**

*Type: pCR For: Approval  
 37.717-00-00 v0.6.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209305 TP for 37.717-00-00 CA\_n41A\_SUL\_n79A-n97A**

*Type: pCR For: Approval  
 37.717-00-00 v0.6.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209306 CR for 38.307 to update the release independence for R17 SUL band combinations**

*Type: CR For: Agreement  
 38.307 v17.5.0 CR-0099 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209307 TP for 37.717-00-00 to update the editorial errors**

*Type: pCR For: Approval  
 37.717-00-00 v0.6.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

### 8.20 Band combinations for Uu and V2X con-current operation

**[103-e][118] NR\_LTE\_V2X\_PC5\_combos, AI 8.20 – Yuan Gao**

**R4-2210253 Email discussion summary for [103-e][118] NR\_LTE\_V2X\_PC5\_combos**

*Type: other For: Information  
 Source: Moderator (CATT)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210451 (from R4-2210253).**

**R4-2210451 Email discussion summary for [103-e][118] NR\_LTE\_V2X\_PC5\_combos**

*Type: other For: Information  
 Source: Moderator (CATT)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2208191 | R4-2210752 | Draft CR for TS 38.101-1, Introduce new band combination of V2X\_n5A-n47A | CATT | Revised |  |
| R4-2208192 | R4-2210753 | Draft CR for TS 38.101-3, Introduce new band combinations of V2X\_n5A\_47A and V2X\_5A\_n47A | CATT | Revised |  |
| R4-2208193 |  | Big CR for TS 38.101-1, Introduce new band combinations of V2X con-current operation | CATT | For email approval |  |
| R4-2208194 |  | Big CR for TS 38.101-3, Introduce new band combinations of V2X con-current operation | CATT | For email approval |  |
| R4-2208660 |  | TR37.875 v0.8.0, Band combinations of V2X con-current operation | CATT | For email approval |  |
| R4-2207629 |  | Calculation of MSD for V2X\_n5A-n47A, V2X\_5A\_n47A and V2X\_n5A\_47A and accompanying TP | Qualcomm Incorporated | Merged |  |
| R4-2208190 | R4-2210754 | TP on coexistence study of V2X\_n5A-n47A, V2X\_5A\_n47A and V2X\_n5A\_47A | CATT | Revised |  |
| R4-2209355 | R4-2210755 | Draft CR for 38.101-1 to update the requirements for V2X con-current band combinations | Huawei, HiSilicon | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2208191 | R4-2210752 | Draft CR for TS 38.101-1, Introduce new band combination of V2X\_n5A-n47A | CATT | Endorsed |  |
| R4-2208192 | R4-2210753 | Draft CR for TS 38.101-3, Introduce new band combinations of V2X\_n5A\_47A and V2X\_5A\_n47A | CATT | Endorsed |  |
| R4-2208193 |  | Big CR for TS 38.101-1, Introduce new band combinations of V2X con-current operation | CATT | For email approval |  |
| R4-2208194 |  | Big CR for TS 38.101-3, Introduce new band combinations of V2X con-current operation | CATT | For email approval |  |
| R4-2208660 |  | TR37.875 v0.8.0, Band combinations of V2X con-current operation | CATT | For email approval |  |
| R4-2208190 | R4-2210754 | TP on coexistence study of V2X\_n5A-n47A, V2X\_5A\_n47A and V2X\_n5A\_47A | CATT | Approved |  |
| R4-2209355 | R4-2210755 | Draft CR for 38.101-1 to update the requirements for V2X con-current band combinations | Huawei, HiSilicon | Endorsed |  |

#### 8.20.1 Rapporteur Input (WID/TR/CR)

**R4-2208191 Draft CR for TS 38.101-1, Introduce new band combination of V2X\_n5A-n47A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision: Revised to R4-2210752 (from R4-2208191).**

**R4-2210752 Draft CR for TS 38.101-1, Introduce new band combination of V2X\_n5A-n47A**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208192 Draft CR for TS 38.101-3, Introduce new band combinations of V2X\_n5A\_47A and V2X\_5A\_n47A**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision: Revised to R4-2210753 (from R4-2208192).**

**R4-2210753 Draft CR for TS 38.101-3, Introduce new band combinations of V2X\_n5A\_47A and V2X\_5A\_n47A**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208193 Big CR for TS 38.101-1, Introduce new band combinations of V2X con-current operation**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1063 rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision:** The document was **for email approval**.

**R4-2208194 Big CR for TS 38.101-3, Introduce new band combinations of V2X con-current operation**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0713 rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision:** The document was **for email approval**.

**R4-2208660 TR37.875 v0.8.0, Band combinations of V2X con-current operation**

*Type: draft TR For: Agreement  
 37.875 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: CATT*

**Decision:** The document was **for email approval**.

#### 8.20.2 UE RF requirements

**R4-2207629 Calculation of MSD for V2X\_n5A-n47A, V2X\_5A\_n47A and V2X\_n5A\_47A and accompanying TP**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Presents MSD for V2X\_n5A-n47A, V2X\_5A\_n47A and V2X\_n5A\_47A and details a TP for these band combinations.

**Decision: Merged (with R4-221xxxx).**

**R4-2208190 TP on coexistence study of V2X\_n5A-n47A, V2X\_5A\_n47A and V2X\_n5A\_47A**

*Type: pCR For: Approval  
 37.875 v0.7.0 CR- rev Cat: (Rel-17)  
  
 Source: CATT*

**Decision: Revised to R4-2210754 (from R4-2208190).**

**R4-2210754 TP on coexistence study of V2X\_n5A-n47A, V2X\_5A\_n47A and V2X\_n5A\_47A**

*Type: pCR For: Approval  
 37.875 v0.7.0 CR- rev Cat: (Rel-17)  
  
 Source: CATT*

**Decision: Approved.**

**R4-2209355 Draft CR for 38.101-1 to update the requirements for V2X con-current band combinations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210755 (from R4-2209355).**

**R4-2210755 Draft CR for 38.101-1 to update the requirements for V2X con-current band combinations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

### 8.21 Adding channel bandwidth support to existing NR bands

**[103-e][119] NR\_bands\_R17\_BWs, AI 8.21 – Dominique Evereare**

**R4-2210254 Email discussion summary for [103-e][119] NR\_bands\_R17\_BWs**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210452 (from R4-2210254).**

**R4-2210452 Email discussion summary for [103-e][119] NR\_bands\_R17\_BWs**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210558 | WF on adding 100 MHz channel BW in NR-U bands n46 and n96. | Qualcomm |  |
| R4-2210559 | Draft CR to TS 38.101-1: adding 100 MHz channel BW for bands n46, n96 and n102 | Qualcomm, Skyworks |  |
| R4-2210560 | Draft CR to TS 38.104: adding 100 MHz channel BW for bands n46, n96 and n102 | Qualcomm |  |
| R4-2210561 | WF on new channel bandwidths in band n41 and n90 | T-Mobile USA |  |
| R4-2210562 | Draft CR to TS 38.101-1: adding 25 and 30 MHz channel BW for band n26 | Telstra |  |
| R4-2210563 | Draft CR to TS 38.104: adding 25 and 30 MHz channel BW for band n26 | Telstra |  |
| R4-2210564 | Revised Basket WID on adding channel bandwidth support to existing NR bands | Ericsson | The request for n41 will be updated: 5 MHz will be removed from n41 request and a new request for n90 will be added instead.  As agreed in the 1st round, n102 will also be added to the request for n46 and n96. |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| **Big CRs** | | | | | |
| R4-2208903 |  | Big CR to TS 38.104: Adding channel BW support in existing NR bands | Ericsson | For email approval |  |
| R4-2208904 |  | Big CR to TS 38.101-1: Adding channel BW support in existing NR bands | Ericsson | For email approval |  |
| **NR-U** | | | | | |
| R4-2207714 |  | NR-U 100 MHz channel bandwidth for n46 | Charter Communications, Inc | Noted |  |
| R4-2207995 |  | Finalizing UE requirement for 100MHz CBW in NRU bands | Skyworks Solutions Inc. | Noted |  |
| R4-2208036 |  | NR-U 100 MHz channelization in band n46 | Qualcomm Incorporated | Noted |  |
| R4-2208039 |  | Views on NR-U 100MHz in n46 | Intel Corporation | Withdrawn |  |
| R4-2208043 |  | Views on NR-U 100MHz in n46 | Intel Corporation | Noted |  |
| R4-2209320 |  | NR-U Introduction of 100 MHz CBW | Apple | Noted |  |
| R4-2209644 |  | NR-U Triple Punctured Channel SEM for 100 MHz Bandwidth | CableLabs, Charter Communications | Noted |  |
| **n41: adding 5, 25, 35 and 45 MHz** | | | | | |
| R4-2210012 | R4-2210756 | Draft CR to TS 38.104: Adding new channel BWs in band n41 | T-Mobile USA | Revised |  |
| R4-2210013 | R4-2210757 | Draft CR for 38.101-1: Addition of 5, 25, 35 and 45 MHz for n41 | T-Mobile USA | Revised |  |
| **n28 and n83: adding 25 MHz** | | | | | |
| R4-2208005 |  | n28 25MHz AMPR | Qualcomm Incorporated | Noted |  |
| R4-2208006 |  | n28 25MHz REFSENS | Qualcomm Incorporated | Noted |  |
| R4-2208402 | R4-2210758 | Draft CR for 38.101-1- Addition of 25 MHz for n28 and n83 | CMCC | Revised |  |
| R4-2208403 |  | Draft CR for 38.104- Addition of 25 MHz for n28 and n83 | CMCC | Return to | To be approved with draft CR to 38.101-1 |
| R4-2209246 |  | Discussion on adding 25MHz channel bandwidth in Band n28 | Huawei, HiSilicon | Noted |  |
| R4-2209247 |  | Discussion on REFSENS evaluation for band n28 supporting 25MHz | Huawei, HiSilicon | Noted |  |
| R4-2209248 |  | Draft CR for 38.101-1 on adding 25MHz channel bandwidth for n28 and n83 | Huawei, HiSilicon | Noted |  |
| R4-2209249 |  | Draft CR for 38.104 on adding 25MHz channel bandwidth for n28 and n83 | Huawei, HiSilicon | Noted |  |
| R4-2210234 |  | Band n28 25MHz REFSENS | Skyworks Solutions Inc. | Noted |  |
| **n26: adding 25 and 30MHz** | | | | | |
| R4-2208007 |  | n26 25/30MHz REFSENS and Coexistence | Qualcomm Incorporated | Noted |  |
| R4-2208852 |  | Discussion on n26 supporting 25\_30MHz | MediaTek Inc. | Noted |  |
| R4-2210235 |  | Adding 25MHz and 30MHz CBW to Band n26 | Skyworks Solutions, Inc. | Noted |  |
| **Misc** | | | | | |
| R4-2207708 |  | Clarification on UE behavior to new channel bandwidth(s) introduced in later release during initial access | China Telecom Corporation Ltd. | Noted |  |
| R4-2207709 | R4-2210759 | CR to TS 38.307: Clarification on UE behavior to new channel bandwidth(s) introduced in later release during initial access | China Telecom Corporation Ltd. | Revised |  |
| R4-2208000 |  | CR for 38.101-1 Rel17 Minor Correction for n48 NS\_27 30MHz inequality | Qualcomm Incorporated | Agreed |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| **Big CRs** | | | | | |
| R4-2208903 |  | Big CR to TS 38.104: Adding channel BW support in existing NR bands | Ericsson | For email approval |  |
| R4-2208904 |  | Big CR to TS 38.101-1: Adding channel BW support in existing NR bands | Ericsson | For email approval |  |
| **NR-U** | | | | | |
| R4-2210558 |  | WF on adding 100 MHz channel BW in NR-U bands n46 and n96. | Qualcomm | Approved |  |
| R4-2210559 |  | Draft CR to TS 38.101-1: adding 100 MHz channel BW for bands n46, n96 and n102 | Qualcomm, Skyworks | Endorsed |  |
| R4-2210560 |  | Draft CR to TS 38.104: adding 100 MHz channel BW for bands n46, n96 and n102 | Qualcomm | Endorsed |  |
| **n41: adding 5, 25, 35 and 45 MHz** | | | | | |
| R4-2210756 (Revision of R4-2210012) |  | Draft CR to TS 38.104: Adding new channel BWs in band n41 | T-Mobile USA | Endorsed |  |
| R4-2210757 (Revision of R4-2210013) |  | Draft CR for 38.101-1: Addition of 5, 25, 35 and 45 MHz for n41 | T-Mobile USA | Endorsed |  |
| R4-2210561 |  | WF on new channel bandwidths in band n41 and n90 | T-Mobile USA | Withdrawn |  |
| **n28 and n83: adding 25 MHz** | | | | | |
| R4-2210758 (Revision of R4-2208402) |  | Draft CR for 38.101-1- Addition of 25 MHz for n28 and n83 | CMCC | Endorsed | Huawei, HiSilicon would like to co-sign. |
| R4-2208403 |  | Draft CR for 38.104- Addition of 25 MHz for n28 and n83 | CMCC | Endorsed |  |
| **n26: adding 25 and 30MHz** | | | | | |
| R4-2210562 |  | Draft CR to TS 38.101-1: adding 25 and 30 MHz channel BW for band n26 | Telstra | Endorsed |  |
| R4-2210563 |  | Draft CR to TS 38.104: adding 25 and 30 MHz channel BW for band n26 | Telstra | Endorsed |  |
| **Misc** | | | | | |
| R4-2210759 |  | CR to TS 38.307: Clarification on UE behavior to new channel bandwidth(s) introduced in later release during initial access | China Telecom Corporation Ltd. | Not pursued |  |
| R4-2210564 |  | Revised Basket WID on adding channel bandwidth support to existing NR bands | Ericsson | Endorsed |  |

**R4-2210558 WF on adding 100 MHz channel BW in NR-U bands n46 and n96.**

*Type: other For: Approval  
 Source: Qualcomm*

**Decision: Approved.**

**R4-2210559 Draft CR to TS 38.101-1: adding 100 MHz channel BW for bands n46, n96 and n102**

*Type: draftCR For: Endorsement  
 Source: Qualcomm, Skyworks*

**Decision: Endorsed.**

**R4-2210560 Draft CR to TS 38.104: adding 100 MHz channel BW for bands n46, n96 and n102**

*Type: draftCR For: Endorsement  
 Source: Qualcomm*

**Decision: Endorsed.**

**R4-2210561 WF on new channel bandwidths in band n41 and n90**

*Type: other For: Approval  
 Source: T-Mobile USA*

**Decision: Withdrawn.**

**R4-2210562 Draft CR to TS 38.101-1: adding 25 and 30 MHz channel BW for band n26**

*Type: draftCR For: Endorsement  
 Source: Telstra*

**Decision: Endorsed.**

**R4-2210563 Draft CR to TS 38.104: adding 25 and 30 MHz channel BW for band n26**

*Type: draftCR For: Endorsement  
 Source: Telstra*

**Decision: Endorsed.**

**R4-2210564 Revised Basket WID on adding channel bandwidth support to existing NR bands**

*Type: WID revised For: Approval  
 Source: Ericsson*

**Decision: Endorsed.**

#### 8.21.1 Rapporteur Input (WID/TR/CR)

**R4-2208903 Big CR to TS 38.104: Adding channel BW support in existing NR bands**

*Type: CR For: Agreement  
 38.104 v17.5.0 CR-0381 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This big CR will capture all draft CRs endorsed in RAN4#102-e meeting

**Decision:** The document was **for email approval**.

#### 8.21.1 Rapporteur Input (WID/TR/CR)

**R4-2208904 Big CR to TS 38.101-1: Adding channel BW support in existing NR bands**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1080 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This big CR will capture all draft CRs endorsed in RAN4#102-e meeting

**Decision:** The document was **for email approval**.

#### 8.21.2 UE RF requirements

##### 8.21.2.1 Addition of bandwidth and Tx/Rx requirements

**R4-2207708 Clarification on UE behavior to new channel bandwidth(s) introduced in later release during initial access**

*Type: discussion For: Discussion  
 Source: China Telecom Corporation Ltd.*

**Decision: Noted.**

**R4-2207709 Clarification on UE behavior to new channel bandwidth(s) introduced in later release during initial access**

*Type: CR For: Agreement  
 38.307 v17.5.0 CR-0097 rev Cat: F (Rel-17)  
  
 Source: China Telecom Corporation Ltd.*

**Decision: Revised to R4-2210759 (from R4-2207709).**

**R4-2210759 Clarification on UE behavior to new channel bandwidth(s) introduced in later release during initial access**

*Type: CR For: Agreement  
 38.307 v17.5.0 CR-0097 rev Cat: F (Rel-17)  
  
 Source: China Telecom Corporation Ltd.*

**Decision: Not pursued.**

**R4-2208000 CR for 38.101-1 Rel17 Minor Correction for n48 NS\_27 30MHz inequality**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1058 rev Cat: F (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2208005 n28 25MHz AMPR**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2208006 n28 25MHz REFSENS**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2208007 n26 25/30MHz REFSENS and Coexistence**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2208402 Draft CR for 38.101-1- Addition of 25 MHz for n28 and n83**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: CMCC*

**Decision: Revised to R4-2210758 (from R4-2208402).**

**R4-2210758 Draft CR for 38.101-1- Addition of 25 MHz for n28 and n83**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: CMCC*

**Decision: Endorsed.**

**R4-2208852 Discussion on n26 supporting 25\_30MHz**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2209246 Discussion on adding 25MHz channel bandwidth in Band n28**

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

**Decision: Noted.**

**R4-2209247 Discussion on REFSENS evaluation for band n28 supporting 25MHz**

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

**Decision: Noted.**

**R4-2209248 Draft CR for 38.101-1 on adding 25MHz channel bandwidth for n28 and n83**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2210013 Draft CR for 38.101-1: Addition of 5, 25, 35 and 45 MHz for n41**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: T-Mobile USA*

**Decision: Revised to R4-2210757 (from R4-2210013).**

**R4-2210757 Draft CR for 38.101-1: Addition of 5, 25, 35 and 45 MHz for n41**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: T-Mobile USA*

**Decision: Endorsed.**

**R4-2210234 Band n28 25MHz REFSENS**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Decision: Noted.**

**R4-2210235 Adding 25MHz and 30MHz CBW to Band n26**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Decision: Noted.**

##### 8.21.2.2 NR-U 100MHz bandwidth

**R4-2207714 NR-U 100 MHz channel bandwidth for n46**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-16)  
  
 Source: Charter Communications, Inc*

**Decision: Noted.**

**R4-2207995 Finalizing UE requirement for 100MHz CBW in NRU bands**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution identify all the requirements that can be finalized for 100MHz CBW for the UE side. Notably applicable SEM mask, channelization, ULCA, MPR and A-MPR for each NR-U bands.

**Decision: Noted.**

**R4-2208036 NR-U 100 MHz channelization in band n46**

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

**Decision: Noted.**

**R4-2208039 Views on NR-U 100MHz in n46**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2208043 Views on NR-U 100MHz in n46**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2209320 NR-U Introduction of 100 MHz CBW**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2209644 NR-U Triple Punctured Channel SEM for 100 MHz Bandwidth**

*Type: discussion For: Approval  
 38.104 v CR- rev Cat: (Rel-17)  
  
 Source: CableLabs, Charter Communications*

**Decision: Noted.**

#### 8.21.3 BS RF requirements

**R4-2208403 Draft CR for 38.104- Addition of 25 MHz for n28 and n83**

*Type: draftCR For: Endorsement  
 38.104 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: CMCC*

**Decision: Endorsed.**

**R4-2209249 Draft CR for 38.104 on adding 25MHz channel bandwidth for n28 and n83**

*Type: draftCR For: Endorsement  
 38.104 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2210012 Draft CR to TS 38.104: Adding new channel BWs in band n41**

*Type: draftCR For: Endorsement  
 38.104 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: T-Mobile USA*

**Decision: Revised to R4-2210756 (from R4-2210012).**

**R4-2210756 Draft CR to TS 38.104: Adding new channel BWs in band n41**

*Type: draftCR For: Endorsement  
 38.104 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: T-Mobile USA*

**Decision: Endorsed.**

### 8.22 Introduction of bandwidth combination set 4 (BCS4) for NR

**[103-e][120] NR\_BCS4-Core, AI 8.22 – Peng Zhang**

**R4-2210255 Email discussion summary for [103-e][120] NR\_BCS4-Core**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210453 (from R4-2210255).**

**R4-2210453 Email discussion summary for [103-e][120] NR\_BCS4-Core**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210565 | WF on criteria on Rel-17 enhanced MSD table format | Skyworks Solutions Inc. |  |
| R4-2210566 | Draft CR for R17 38.101-1 to introduce new table format for MSD due to cross-band isolation | Skyworks Solutions Inc. | During the post email discussion, basket rapporteurs (ZTE 2band CA\_PC3, China Telecom 2band CA\_PC2/PC1.5 ) can merge these draft CRs into basket big CRs respectively in order to solve the CR conflicts, if it’s agreeable. |
| R4-2210567 | Draft CR for 38.101-1 to introduce new table format for MSD due to harmonic interference and for SUL | Huawei, HiSilicon | During the post email discussion, basket rapporteurs (ZTE 2band CA\_PC3, Huawei SUL, China Telecom 2band CA\_PC2/PC1.5 ) can merge these draft CRs into basket big CRs respectively in order to solve the CR conflicts, if it’s agreeable. |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2208454](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208454.zip) |  | Discussion on the reduced MSD configurations for harmonic and cross-band isolation for NR CA | CHTTL | Noted |  |
| [R4-2208676](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208676.zip) |  | Discussion on maximum aggregated channel bandwidth | Qualcomm Incorporated | Noted |  |
| [R4-2208681](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208681.zip) |  | Discussion on improvement on MSD for harmonic and cross-band isolation for NR CA | ZTE Corporation | Noted |  |
| [R4-2208858](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208858.zip) |  | Discussion on the max aggregated CBW of intra-band CA for BCS4/5 | Xiaomi | Noted |  |
| [R4-2209358](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209358.zip) |  | Discussion on simplifying extended MSD table for SUL | Huawei, HiSilicon | Noted |  |
| R4-2209420 |  | CR for 38.101-3 to clarify that BCS4 and BCS5 can't be reported together | Huawei, HiSilicon | Agreed |  |
| R4-2209421 |  | CR for 38.101-1 to introduce the missing requirements for BCS4 | Huawei, HiSilicon | Agreed |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210565 |  | WF on criteria on Rel-17 enhanced MSD table format | Skyworks Solutions Inc. | Approved |  |
| R4-2210566 |  | Draft CR for R17 38.101-1 to introduce new table format for MSD due to cross-band isolation | Skyworks Solutions Inc. | Endorsed |  |
| R4-2210567 |  | Draft CR for 38.101-1 to introduce new table format for MSD due to harmonic interference and for SUL | Huawei, HiSilicon | Endorsed |  |

**R4-2210565 WF on criteria on Rel-17 enhanced MSD table format**

*Type: other For: Approval  
 Source: Skyworks*

**Decision: Approved.**

**R4-2210566 Draft CR for R17 38.101-1 to introduce new table format for MSD due to cross-band isolation**

*Type: draftCR For: Endorsement  
 Source: Skyworks*

**Decision: Endorsed.**

**R4-2210567 Draft CR for 38.101-1 to introduce new table format for MSD due to harmonic interference and for SUL**

*Type: draftCR For: Endorsement  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

#### 8.22.1 Rapporteur Input (WID/TR/CR)

#### 8.22.2 UE RF requirements for BCS4/BCS5

**R4-2208454 Discussion on the reduced MSD configurations for harmonic and cross-band isolation for NR CA**

*Type: discussion For: Discussion  
 Source: CHTTL*

**Decision: Noted.**

**R4-2208676 Discussion on maximum aggregated channel bandwidth**

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

**Decision: Noted.**

**R4-2208681 Discussion on improvement on MSD for harmonic and cross-band isolation for NR CA**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208858 Discussion on the max aggregated CBW of intra-band CA for BCS4/5**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2209358 Discussion on simplifying extended MSD table for SUL**

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

**Decision: Noted.**

**R4-2209359 CR for 38.101-3 to clarify that BCS4 and BCS5 can't be reported together**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1094 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

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

**R4-2209360 CR for 38.101-1 to introduce the missing requirements for BCS4**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0723 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

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

**R4-2209420 CR for 38.101-3 to clarify that BCS4 and BCS5 can't be reported together**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0724 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2209421 CR for 38.101-1 to introduce the missing requirements for BCS4**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1098 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

### 8.23 High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, Band 13, Band n5, Band n13, and Band n71

**[103-e][121] LTE\_NR\_HPUE\_FWVM, AI 8.23 – Man Hung Ng**

**R4-2210256 Email discussion summary for [103-e][121] LTE\_NR\_HPUE\_FWVM**

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

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210454 (from R4-2210256).**

**R4-2210454 Email discussion summary for [103-e][121] LTE\_NR\_HPUE\_FWVM**

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

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210568 | CR for TR 37.828 on release independence | Nokia | 37.828v17.0.0, Cat F CR |
| R4-2210569 | WF on A-MPR for bands n71 and n85 | Skyworks |  |
|  | Updates for PC1 FWVA UEs operating on Bands 5, 12, 13 | Huawei, HiSilicon | Draft CR |
| R4-2211143 | CR for 38.101-1: Addition of PC1 for NR bands | T-Mobile USA Inc. | CR, AI 8.23, Rel-17, 38.101-1 Cat-B |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2209105 |  | Release Independence aspects of high-power UE operation for fixed-wireless/vehicle-mounted use cases | Nokia | Approved |  |
| R4-2210155 | R4-2210760 | Draft CR for 38.101-1: Addition of PC1 for n26, n71 and n85 | T-Mobile USA Inc. | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210568 |  | CR for TR 37.828 on release independence | Nokia | Agreed |  |
| R4-2210569 |  | WF on A-MPR for bands n71 and n85 | Skyworks | Approved |  |
| R4-2211143 |  | CR for 38.101-1: Addition of PC1 for NR bands | T-Mobile USA Inc. | Withdrawn |  |
| R4-2210760 |  | Draft CR for 38.101-1: Addition of PC1 for n26, n71 and n85 | T-Mobile USA Inc. | Not pursued |  |

**R4-2210568 CR for TR 37.828 on release independence**

*Type: CR For: Agreement  
 38.828 v17.0.0 CR-0001 rev Cat: F (Rel-17)  
  
 Source: Nokia*

**Decision: Agreed.**

**R4-2210569 WF on A-MPR for bands n71 and n85**

*Type: other For: Approval  
 Source: Skyworks*

**Decision: Approved.**

**R4-2211143 CR for 38.101-1: Addition of PC1 for NR bands**

*Type: CR For: Agreement  
 38.101-1 v17.x.x CR- rev Cat: (Rel-17)  
  
 Source: T-Mobile USA Inc.*

**Decision: Withdrawn.**

#### 8.23.1 General

**R4-2209105 Release Independence aspects of high-power UE operation for fixed-wireless/vehicle-mounted use cases**

*Type: other For: Approval  
 Source: Nokia*

**Decision: Approved.**

#### 8.23.2 Coexistence study

#### 8.23.3 UE RF requirements

**R4-2210155 Draft CR for 38.101-1: Addition of PC1 for n26, n71 and n85**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: T-Mobile USA Inc.*

**Decision: Revised to R4-2210760 (from R4-2210155).**

**R4-2210760 Draft CR for 38.101-1: Addition of PC1 for n26, n71 and n85**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: T-Mobile USA Inc.*

**Decision: Not pursued.**

### 8.24 High power UE (power class 2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink

**[103-e][122] NR\_PC2\_SUL\_CA\_lowMSD, AI 8.24, 8.26 – Bo Liu**

**R4-2210257 Email discussion summary for [103-e][122] NR\_PC2\_SUL\_CA\_lowMSD**

*Type: other For: Information  
 Source: Moderator (China Telecom)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210455 (from R4-2210257).**

**R4-2210455 Email discussion summary for [103-e][122] NR\_PC2\_SUL\_CA\_lowMSD**

*Type: other For: Information  
 Source: Moderator (China Telecom)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207722 |  | TP for TR 38.841 Addition of n77 PC1.5 UL for CA\_n12-n77 | AT&T | Approved |  |
| R4-2207723 |  | TP for TR 38.841 Addition of n77 PC1.5 UL for CA\_n14-n77 | AT&T | Approved |  |
| R4-2207724 |  | TP for TR 38.841 Addition of n77 PC1.5 UL for CA\_n29-n77 | AT&T | Approved |  |
| R4-2207725 | R4-2210761 | TP for TR 38.841 Update for n77 PC2 UL and Addition of n77 PC1.5 UL for CA\_n30-n77 | AT&T | Revised |  |
| R4-2207935 | R4-2210762 | TP for TR 38.841: CA\_n13-n77 | Verizon, Samsung | Revised |  |
| R4-2207936 |  | TP for TR 38.841: CA\_n5-n77 | Verizon, Samsung | Approved |  |
| R4-2207937 |  | TP for TR 38.841: CA\_n2-n77 | Verizon, Samsung | Approved |  |
| R4-2207939 | R4-2210763 | Draft CR for 38.101-1: Addition PC1.5 single uplink for downlink combinations | Verizon, Samsung | Revised |  |
| R4-2209182 |  | Proposal 1: RAN4 to adopt the new UE capability of per band per band combination power class and approve the CR to TS 38.101-1 in R4-2209183. | Huawei, HiSilicon | Noted |  |
| R4-2209183 | R4-2210764 | CR to TS38101-1 Resolving power class ambiguity for NR Inter-band CA | Huawei, HiSilicon | Revised |  |
| R4-2210005 |  | Draft CR for 38.101-1: Addition of PC2 and PC1.5 for CA\_n41-n71 | T-Mobile USA | Endorsed |  |
| R4-2210006 |  | Draft CR for 38.101-1: Addition of n77 PC1.5 for CA\_n66-n77 | T-Mobile USA | Endorsed |  |
| R4-2210007 |  | Draft CR for 38.101-1: Addition of PC2 and PC1.5 for CA\_n25-n77 | T-Mobile USA | Endorsed |  |
| R4-2210008 |  | Draft CR for 38.101-1: Addition of PC2 and PC1.5 n41 for CA\_n41(3A) and CA\_n41(A-C) | T-Mobile USA | Endorsed |  |
| R4-2210009 | R4-2210765 | Draft CR for 38.101-1: Addition of n77 UL PC2 and PC1.5 for DL CA\_n77(2A) | T-Mobile USA | Revised |  |
| R4-2210010 |  | Draft CR for 38.101-1: Addition of PC2 and PC1.5 for CA\_n71-n77 | T-Mobile USA | Endorsed |  |
| R4-2210011 |  | Draft CR for 38.101-1: Addition of PC2 and PC1.5 for CA\_n41-n77 | T-Mobile USA | Endorsed |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207726 |  | DraftCR 38.101-1 Addition of PC2 CA Combinations | AT&T | Endorsed |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207725 | R4-2210761 | TP for TR 38.841 Update for n77 PC2 UL and Addition of n77 PC1.5 UL for CA\_n30-n77 | AT&T | 7725 approved  R4-2210761 withdrawn |  |
| R4-2210762 |  | TP for TR 38.841: CA\_n13-n77 | Verizon, Samsung | Approved |  |
| R4-2210763 |  | Draft CR for 38.101-1: Addition PC1.5 single uplink for downlink combinations | Verizon, Samsung | Endorsed |  |
| R4-2210764 |  | CR to TS38101-1 Resolving power class ambiguity for NR Inter-band CA | Huawei, HiSilicon | Agreed |  |
| R4-2210009 |  | Draft CR for 38.101-1: Addition of n77 UL PC2 and PC1.5 for DL CA\_n77(2A) | T-Mobile USA | 10009 endorsed  R4-2210765 withdrawn |  |

#### 8.24.1 Rapporteur Input (WID/TR/CR)

**R4-2208335 Big CR to 38.101-1 Introduce RF requirements for HPUE CA with 2 bands downlink and x bands uplink (x =1,2)**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1065 rev Cat: B (Rel-17)  
  
 Source: China Telecom*

**Abstract:**

big CR for email approval

**Decision:** The document was **for email approval**.

**R4-2208643 Draft TR 38.841 v1.1.0: High power UE for NR inter-band Carrier Aggregation with 2 bands downlink and x bands uplink (x =1,2)**

*Type: draft TR For: Agreement  
 38.841 v1.1.0 CR- rev Cat: (Rel-17)  
  
 Source: Chinatelecom Cloud*

**Abstract:**

draft TR for email approval

**Decision:** The document was **not for email approval**.

#### 8.24.2 UE RF requirements

**R4-2207722 TP for TR 38.841 Addition of n77 PC1.5 UL for CA\_n12-n77**

*Type: pCR For: Approval  
 38.841 v1.0.1 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Approved.**

**R4-2207723 TP for TR 38.841 Addition of n77 PC1.5 UL for CA\_n14-n77**

*Type: pCR For: Approval  
 38.841 v1.0.1 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Approved.**

**R4-2207724 TP for TR 38.841 Addition of n77 PC1.5 UL for CA\_n29-n77**

*Type: pCR For: Approval  
 38.841 v1.0.1 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Approved.**

**R4-2207725 TP for TR 38.841 Update for n77 PC2 UL and Addition of n77 PC1.5 UL for CA\_n30-n77**

*Type: pCR For: Approval  
 38.841 v1.0.1 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Approved.**

**R4-2210761 TP for TR 38.841 Update for n77 PC2 UL and Addition of n77 PC1.5 UL for CA\_n30-n77**

*Type: pCR For: Approval  
 38.841 v1.0.1 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Withdrawn.**

**R4-2207935 TP for TR 38.841: CA\_n13-n77**

*Type: pCR For: Approval  
 38.841 v1.0.1 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Revised to R4-2210762 (from R4-2207935).**

**R4-2210762 TP for TR 38.841: CA\_n13-n77**

*Type: pCR For: Approval  
 38.841 v1.0.1 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Approved.**

**R4-2207936 TP for TR 38.841: CA\_n5-n77**

*Type: pCR For: Approval  
 38.841 v1.0.1 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Approved.**

**R4-2207937 TP for TR 38.841: CA\_n2-n77**

*Type: pCR For: Approval  
 38.841 v1.0.1 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Approved.**

**R4-2207939 Draft CR for 38.101-1: Addition PC1.5 single uplink for downlink combinations**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Revised to R4-2210763 (from R4-2207939).**

**R4-2210763 Draft CR for 38.101-1: Addition PC1.5 single uplink for downlink combinations**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Endorsed.**

**R4-2209182 On Power Class Ambiguity for NR inter-band CA**

*Type: discussion For: Agreement  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2209183 CR to TS38101-1 Resolving power class ambiguity for NR Inter-band CA**

*Type: draftCR For: Agreement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210764 (from R4-2209183).**

**R4-2210764 CR to TS38101-1 Resolving power class ambiguity for NR Inter-band CA**

*Type: draftCR For: Agreement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2210005 Draft CR for 38.101-1: Addition of PC2 and PC1.5 for CA\_n41-n71**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: T-Mobile USA*

**Decision: Endorsed.**

**R4-2210006 Draft CR for 38.101-1: Addition of n77 PC1.5 for CA\_n66-n77**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: T-Mobile USA*

**Decision: Endorsed.**

**R4-2210007 Draft CR for 38.101-1: Addition of PC2 and PC1.5 for CA\_n25-n77**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: T-Mobile USA*

**Decision: Endorsed.**

**R4-2210008 Draft CR for 38.101-1: Addition of PC2 and PC1.5 n41 for CA\_n41(3A) and CA\_n41(A-C)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: T-Mobile USA*

**Decision: Endorsed.**

**R4-2210009 Draft CR for 38.101-1: Addition of n77 UL PC2 and PC1.5 for DL CA\_n77(2A)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: T-Mobile USA*

**Decision: Endorsed.**

**R4-2210765 Draft CR for 38.101-1: Addition of n77 UL PC2 and PC1.5 for DL CA\_n77(2A)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: T-Mobile USA*

**Decision: Withdrawn.**

**R4-2210010 Draft CR for 38.101-1: Addition of PC2 and PC1.5 for CA\_n71-n77**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: T-Mobile USA*

**Decision: Endorsed.**

**R4-2210011 Draft CR for 38.101-1: Addition of PC2 and PC1.5 for CA\_n41-n77**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: T-Mobile USA*

**Decision: Endorsed.**

### 8.25 High power UE (power class 2) for EN-DC with 1 LTE band + 1 NR TDD band

#### 8.25.1 Rapporteur Input (WID/TR/CR)

**R4-2207698 Revised WID on High power UE (power class 2) for EN-DC with 1 LTE band + 1 NR TDD band**

*Type: WID revised For: Approval  
 Source: China Unicom*

**Decision:** The document was **for email approval**.

**R4-2207699 Big CR on introduction of completed PC2 for EN-DC with 1 LTE band + 1 NR TDD band**

*Type: CR For: Approval  
 38.101-3 v17.5.0 CR-0709 rev Cat: B (Rel-17)  
  
 Source: China Unicom*

**Decision:** The document was **for email approval**.

**R4-2207700 TR 37.826 v1.2.0 ENDC\_UE\_PC2\_R17\_NR\_TDD**

*Type: draft TR For: Agreement  
 37.826 v1.2.0 CR- rev Cat: (Rel-17)  
  
 Source: China Unicom*

**Decision: Agreed.**

#### 8.25.2 UE RF requirements

**R4-2208427 TP for TR 37.826: update PC2 support for DC\_3-3\_n78, DC\_7-7\_n78**

*Type: pCR For: Approval  
 37.826 v1.1.0 CR- rev Cat: (Rel-17)  
  
 Source: CHTTL*

**Decision: Approved.**

### 8.26 Power Class 2 UE for NR inter-band CA and SUL configurations with x (x>2) bands DL and y (y=1, 2) bands UL

#### 8.26.1 Rapporteur Input (WID/TR/CR)

**R4-2209177 draft TR 38.842 v0.4.0**

*Type: draft TR For: Agreement  
 38.842 v0.3.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon, China Unicom*

**Decision:** The document was **for email approval**.

**R4-2209178 Revised WID on NR\_UE\_PC2\_R17\_CADC\_SUL\_xBDL\_yBUL**

*Type: WID revised For: Agreement  
 Source: Huawei, HiSilicon, China Unicom*

**Decision:** The document was **for email approval**.

**R4-2209179 Big CR to 38.101-1 Introduce RF requirements for HPUE CA**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1087 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon, China Unicom*

**Decision:** The document was **for email approval**.

#### 8.26.2 UE RF requirements

**R4-2207726 DraftCR 38.101-1 Addition of PC2 CA Combinations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: AT&T*

**Decision: Endorsed.**

**R4-2208008 CA\_n30-n77 MSD NRCA PC2\_R17\_2BDL\_1BUL TR 38.842**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

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

### 8.27 Power Class 2 for EN-DC with xLTE band + yNR DL with 1LTE+1(TDD) NR UL band (x= 2, 3, 4, y=1; x=1, 2, y=2)

**[103-e][123] NR\_PC2\_EN-DC, AI 8.25, 8.27 – Per Lindell**

**R4-2210258 Email discussion summary for [103-e][123] NR\_PC2\_EN-DC**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210456 (from R4-2210258).**

**R4-2210456 Email discussion summary for [103-e][123] NR\_PC2\_EN-DC**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2207938](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207938.zip) | R4-2210766 | Draft CR for 38.101-1: Addition PC1.5 single uplink for 3DL combinations | Verizon, Samsung | Revised  Revision available which have been agreed online in a comment posted on the reflector.  New TDOC needed for the available revision |  |
| [R4-2208427](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208427.zip) |  | TP for TR 37.826: update PC2 support for DC\_3-3\_n78, DC\_7-7\_n78 | CHTTL | Approved |  |
| [R4-2208451](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208451.zip) |  | TP for TR 37.827: update PC2 support for DC\_3-3-7-7\_n78 | CHTTL | Approved |  |
| [R4-2208452](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208452.zip) |  | TP for TR 37.827: update PC2 support for DC\_3-3-8\_n78, DC\_7-7-8\_n78 | CHTTL | Approved |  |
| [R4-2208453](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208453.zip) |  | TP for TR 37.827: update PC2 support for DC\_3-3-7-7-8\_n78 | CHTTL | Approved |  |
| R4-2207698 |  | Revised WID on High power UE (power class 2) for EN-DC with 1 LTE band + 1 NR TDD band | China Unicom | For email approval |  |
| R4-2207699 |  | Big CR on introduction of completed PC2 for EN-DC with 1 LTE band + 1 NR TDD band | China Unicom | For email approval |  |
| R4-2207700 |  | TR 37.826 v1.2.0 ENDC\_UE\_PC2\_R17\_NR\_TDD | China Unicom | Agreed |  |
| R4-2209545 |  | Revised WID EN-DC PC2 | Ericsson | For email approval |  |
| R4-2209550 |  | big CR 38.101-3 EN-DC PC2 | Ericsson | For email approval |  |
| R4-2209554 |  | TR 37.827 v0.5.0 ENDC\_PC2\_R17\_xLTE\_yNR | Ericsson | For email approval |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2207938](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207938.zip) | R4-2210766 | Draft CR for 38.101-1: Addition PC1.5 single uplink for 3DL combinations | Verizon, Samsung | Endorsed |  |

#### 8.27.1 Rapporteur Input (WID/TR/CR)

**R4-2209545 Revised WID EN-DC PC2**

*Type: WID revised For: Endorsement  
 Source: Ericsson*

**Abstract:**

Revised WID EN-DC PC2

**Decision:** The document was **for email approval**.

**R4-2209550 big CR 38.101-3 EN-DC PC2**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0726 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

big CR 38.101-3 EN-DC PC2

**Decision:** The document was **for email approval**.

**R4-2209554 TR 37.827 v0.5.0 ENDC\_PC2\_R17\_xLTE\_yNR**

*Type: draft TR For: Agreement  
 37.827 v0.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

TR 37.827 v0.5.0 ENDC\_PC2\_R17\_xLTE\_yNR

**Decision:** The document was **for email approval**.

#### 8.27.2 UE RF requirements

**R4-2207938 Draft CR for 38.101-1: Addition PC1.5 single uplink for 3DL combinations**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Revised to R4-2210766 (from R4-2207938).**

**R4-2210766 Draft CR for 38.101-1: Addition PC1.5 single uplink for 3DL combinations**

*Type: draftCR For: Approval  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Verizon, Samsung*

**Decision: Endorsed.**

**R4-2208451 TP for TR 37.827: update PC2 support for DC\_3-3-7-7\_n78**

*Type: pCR For: Approval  
 37.827 v0.4.0 CR- rev Cat: (Rel-17)  
  
 Source: CHTTL*

**Decision: Approved.**

**R4-2208452 TP for TR 37.827: update PC2 support for DC\_3-3-8\_n78, DC\_7-7-8\_n78**

*Type: pCR For: Approval  
 37.827 v0.4.0 CR- rev Cat: (Rel-17)  
  
 Source: CHTTL*

**Decision: Approved.**

**R4-2208453 TP for TR 37.827: update PC2 support for DC\_3-3-7-7-8\_n78**

*Type: pCR For: Approval  
 37.827 v0.4.0 CR- rev Cat: (Rel-17)  
  
 Source: CHTTL*

**Decision: Approved.**

### 8.28 High power UE for NR TDD intra-band carrier aggregation in frequency range FR1

#### 8.28.1 Rapporteur Input (WID/TR/CR)

**R4-2209755 Big CR for TS 38.101-1: Introduce high power UE for NR TDD intra-band CA in FR1**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1111 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210725 (from R4-2209755).**

**R4-2210725 Big CR for TS 38.101-1: Introduce high power UE for NR TDD intra-band CA in FR1**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1111 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2209756 Revised WID for high power UE for NR TDD intra-band CA in FR1**

*Type: WID revised For: Endorsement  
 Source: Huawei, HiSilicon*

**Abstract:**

Reserved WID to reflect the progress in RAN4#103e.

**Decision: Noted.**

#### 8.28.2 UE RF requirements

**R4-2209754 On requirements for high power UE for NR TDD intra-band CA in FR1**

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

**Decision: Noted.**

### 8.29 Increasing UE power high limit for CA and DC

**[103-e][124] NR\_Power\_Limit\_CA\_DC, AI 8.29 – Gene Fong**

**R4-2210259 Email discussion summary for [103-e][124] NR\_Power\_Limit\_CA\_DC**

*Type: other For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210457 (from R4-2210259).**

**R4-2210457 Email discussion summary for [103-e][124] NR\_Power\_Limit\_CA\_DC**

*Type: other For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210570 | LS on testing of increased MOP for CA and DC | OPPO | To: RAN5 (if needed) |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207678 |  | Further views on increasing UE power high limit for CA and DC | Apple | Noted |  |
| R4-2207906 |  | Increased MOP for CA and DC | InterDigital Communications | Noted |  |
| R4-2207990 |  | Finalizing increased power for PC2 inter-band CA | Skyworks Solutions Inc. | Noted |  |
| R4-2208336 |  | Views on increasing UE output power for CA and DC | China Telecom | Noted |  |
| R4-2208426 |  | Scalability and PC per band within a CA for the sum method | Nokia, Nokia Shanghai Bell | Noted |  |
| R4-2208429 |  | Consideration on Increasing UE power high limit for CA and DC | Samsung | Noted |  |
| R4-2208604 |  | Further discussion on the RF requirements of the increasing UE power high limit for CA and DC | vivo | Noted |  |
| R4-2208605 |  | The impact of the increasing UE power high limit for CA and DC | vivo | Noted |  |
| R4-2208748 |  | Draft LS to RAN2 on increasing UE power high limit for CA and DC | Ericsson | Noted |  |
| R4-2208851 |  | Discussion on increasing UE power high limit for CA and DC | MediaTek Inc. | Noted |  |
| R4-2209090 |  | Discussion on increasing UE maximum power high limit | Xiaomi | Noted |  |
| R4-2209184 |  | Views on the solutions for increasing the power limit | Huawei, HiSilicon | Noted |  |
| R4-2209377 |  | R17 UE power class high limit | OPPO | Noted |  |
| R4-2208749 | **-** | Amendment of the power class for CA and DC band combinations | Ericsson | Not pursued |  |
| R4-2209327 | **-** | Draft CR for TS 38.101-1: Enable PC2 inter-band UL CA increasing UE power high limit feature | Apple | Not pursued |  |
| R4-2210198 | R4-2210767 | Increasing the maximum power limit for inter-band UL CA | Qualcomm Incorporated, Verizon, Vodafone, Deutsche Telekom, US Cellular, T-Mobile USA, AT&T, China Unicom, NTT DOCOMO, INC., China Telecom, Nokia, Nokia Shanghai Bell, CableLabs | Revised |  |
| R4-2210199 | R4-2210768 | Increasing the maximum power limit for inter-band UL DC | Qualcomm Incorporated, Verizon, Vodafone, Deutsche Telekom, US Cellular, T-Mobile USA, AT&T, China Unicom, NTT DOCOMO, INC., China Telecom, Nokia, Nokia Shanghai Bell, CableLabs | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210570 |  | LS on testing of increased MOP for CA and DC | OPPO | Noted |  |
| R4-2210198 | R4-2210767 | Increasing the maximum power limit for inter-band UL CA | Qualcomm Incorporated, Verizon, Vodafone, Deutsche Telekom, US Cellular, T-Mobile USA, AT&T, China Unicom, NTT DOCOMO, INC., China Telecom, Nokia, Nokia Shanghai Bell, CableLabs, Charter Communications, Inc., Dish Network, Skyworks Solutions, Inc., ZTE, Huawei, HiSilicon, SGS Wireless | Agreed |  |
| R4-2210199 | R4-2210768 | Increasing the maximum power limit for inter-band UL DC | Qualcomm Incorporated, Verizon, Vodafone, Deutsche Telekom, US Cellular, T-Mobile USA, AT&T, China Unicom, NTT DOCOMO, INC., China Telecom, Nokia, Nokia Shanghai Bell, CableLabs, Charter Communications, Inc., Dish Network, Skyworks Solutions, Inc., ZTE, Huawei, HiSilicon, SGS Wireless | Agreed |  |

Common understanding is that TxD is not pre-requisite of the per band per band combination signaling for power class for CA and DC.

**R4-2210570 LS on testing of increased MOP for CA and DC**

*Type: LSout For: Approval  
 Source: OPPO*

**Decision: Noted.**

**GTW on May-13**

**Disucssions on CR R4-2210198**

**Discussions: (part of miniutes of discussions)**

Mediatek: support the approach to introduce the new signaling or new power class. They both requires antenna connectors. For legacy UE supporting PC3, UE needs information to differentiate the new from the legacy power class.

Ericsson: It is good to know what UE is expected to report. What is the implication of the report for UE behaviour. It is not only about UE to do and inform network. UE simultaneously reports something else which may have other implication. That issue needs more discussion. Regarding the second change below, if we agree to introduce the new capability, the second change is not needed. What is the technique problem of our CR?

Nokia: regarding questions about the behaivor, we think the behaviour is clear. The sum only applies when UE indicates the certain capability and when delta\_P\_powerclass =0. Then that is different point of value. The CR is clear for this behaviour.

Huawei: I tend to agree with Nokia. For power calss fallback, the high power feature could not be enabled. How does Ericsson proposal deal with fall back? For us, increasing the lower and high limit is our preference. Keeping the low limit unchanged without defining the new signaling is also acceptable. Skyworks asked question about the P\_powerclass\_C. It seems Qualcomm said it is drevied from single band capability. We disagree with it. UE can report PC2 on single band but only support PC3 in CA mode. We have CR to clarify this.

Samsung: as CTC, there are three possible soltuions. We cannot accept to define the new power class and cannot accept just raising the upper bound. For both network is difficult to know the power. WE can accept increasing both upper and lower bound. We support Qualcomm solution. We support Huawei proposal to have signaling.

Ericsson: To Nokia, the expected behaviour of UE fallback by 3dB or other values. That is the question. What is the behaviour in fall back?

Qualcomm: To Ericsson question about fallback, the CR is clear. It reads that “If UE reports the capability and P-power-class =0”. To the point about the skyworks about the P\_PowerClass\_C, the CR and the previous discussion about the capabilities are coupled. 23+23 cannot meat 27.8dBm. For such case, there would be no problem. Two concepts should be coupled.

Verizon: CTC made good summary for three options. We cannot accept new power class. We are OK to increase both upper and lower bounds.

Ericsson: to Qualcomm, we understand that text implies 4.8dB fall back. When do we expect this 4.8dB fallback occur? What is the condition? For other power class, the fallback is 3dB. If the agreement is that fallback is 4.8dB for PC2+PC3, the text works. There is no issue. It impies differen UE behaviors in fallback.

Huawei: To Qualcomm, about PPowerClass,C our comment is 23+26. UE has two PAs. This is about two power class per band. Single band, UE is allowed to report 23 for both bands. The PPowerClass,C should be derived on the new signaling.

Skyworks: On defining per-band per BC power class capability, this is more general approach. This is to address the ambiguity. If the signaling exists, it can address issue.

Qualcomm: to Ericsson, it is different UE behaviour. But it is ambugouus. To Huawei, maybe Huawei is thinking UE reports 26 per bands and when aggregated UE can only do 23+26. That case is not very clear. To Skywork, we are concern on it. It is out of scope of CR. This CR is limited to certain cases. We can generalize it in Rel-18.

Samsung: The example given by Huawei is widley discussed previously in the signaling. 23+26 the actual power is 23+26 but if no accurate signaling, network may think UE power is 26+26. The proposed per-band per BC signaling should be add under PPowerClass,C.

#### 8.29.1 General

**R4-2209184 Views on the solutions for increasing the power limit**

*Type: discussion For: Agreement  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

#### 8.29.2 Feasibility and impact study

**R4-2208426 Scalability and PC per band within a CA for the sum method**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208429 Consideration on Increasing UE power high limit for CA and DC**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2208605 The impact of the increasing UE power high limit for CA and DC**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208748 Draft LS to RAN2 on increasing UE power high limit for CA and DC**

*Type: LS out For: Approval  
 to RAN2  
 Source: Ericsson*

**Abstract:**

Draft LS to RAN2 on use of existing signaling mechanism to increase the power limit for CA and DC

**Decision: Noted.**

**R4-2208851 Discussion on increasing UE power high limit for CA and DC**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2209377 R17 UE power class high limit**

*Type: discussion For: Approval  
 Source: OPPO*

**Decision: Noted.**

#### 8.29.3 UE RF requirements

**R4-2207678 Further views on increasing UE power high limit for CA and DC**

*Type: other For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2207906 Increased MOP for CA and DC**

*Type: other For: Approval  
 Source: InterDigital Communications*

**Abstract:**

In this contribution we are discussing the RF requirements impact for UE Tx and suggest UE capability signaling solutions.

**Decision: Noted.**

**R4-2207990 Finalizing increased power for PC2 inter-band CA**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

this contribution focuses on PC2 increased power cases and points at the relevant 2TX cases in one band. Proposals are made for PCmax equation implementation and signaling principle with a per band power class to enable a generic approach.

**Decision: Noted.**

**R4-2208336 Views on increasing UE output power for CA and DC**

*Type: other For: Approval  
 Source: China Telecom*

**Decision: Noted.**

**R4-2208604 Further discussion on the RF requirements of the increasing UE power high limit for CA and DC**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208749 Amendment of the power class for CA and DC band combinations**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR to correct application of the indicated BC power class for DC and CA

**Decision: Not pursued.**

**R4-2209090 Discussion on increasing UE maximum power high limit**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2209327 Draft CR for TS 38.101-1: Enable PC2 inter-band UL CA increasing UE power high limit feature**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Apple*

**Decision: Not pursued.**

**R4-2210198 Increasing the maximum power limit for inter-band UL CA**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1113 rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated, Verizon, Vodafone, Deutsche Telekom, US Cellular, T-Mobile USA, AT&T, China Unicom, NTT DOCOMO, INC., China Telecom, Nokia, Nokia Shanghai Bell, CableLabs, Charter Communications, Inc., Dish Network, Skyworks Solutions, Inc., ZTE, Huawei, HiSilicon, SGS Wireless*

**Decision: Revised to R4-2210767 (from R4-2210198).**

**R4-2210767 Increasing the maximum power limit for inter-band UL CA**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1113 rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated, Verizon, Vodafone, Deutsche Telekom, US Cellular, T-Mobile USA, AT&T, China Unicom, NTT DOCOMO, INC., China Telecom, Nokia, Nokia Shanghai Bell, CableLabs, Charter Communications, Inc., Dish Network, Skyworks Solutions, Inc., ZTE, Huawei, HiSilicon, SGS Wireless*

**Decision: Agreed.**

**R4-2210199 Increasing the maximum power limit for inter-band UL DC**

*Type: CR For: Approval  
 38.101-3 v17.5.0 CR-0730 rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated, Verizon, Vodafone, Deutsche Telekom, US Cellular, T-Mobile USA, AT&T, China Unicom, NTT DOCOMO, INC., China Telecom, Nokia, Nokia Shanghai Bell, CableLabs, Charter Communications, Inc., Dish Network, Skyworks Solutions, Inc., ZTE, Huawei, HiSilicon, SGS Wireless*

**Decision: Revised to R4-2210768 (from R4-2210199).**

**R4-2210768 Increasing the maximum power limit for inter-band UL DC**

*Type: CR For: Approval  
 38.101-3 v17.5.0 CR-0730 rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated, Verizon, Vodafone, Deutsche Telekom, US Cellular, T-Mobile USA, AT&T, China Unicom, NTT DOCOMO, INC., China Telecom, Nokia, Nokia Shanghai Bell, CableLabs, Charter Communications, Inc., Dish Network, Skyworks Solutions, Inc., ZTE, Huawei, HiSilicon, SGS Wireless*

**Decision: Agreed.**

### 8.30 Additional NR bands for UL-MIMO

**[103-e][125] LTE\_NR\_Other\_WI, AI 8.30, 8.31, 10.7, 10.8, 10.8.1 – Jin Wang**

**R4-2210260 Email discussion summary for [103-e][125] LTE\_NR\_Other\_WI**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210458 (from R4-2210260).**

**R4-2210458 Email discussion summary for [103-e][125] LTE\_NR\_Other\_WI**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210571 | Reply LS on UE capability for 16QAM for NB-IoT | Ericsson | To: RAN1; Cc: RAN2 |
| R4-2211155 | CR for updating the note of mandatory simultaneous Rx/Tx capability for FR1 NR-CA combinations (R16) | KDDI | draft CR for information only  AI 8.30, 38.101-1, Rel-16, Cat-F |
| R4-2211156 | CR for updating the note of mandatory simultaneous Rx/Tx capability for FR1 NR-CA combinations (R17) | KDDI | draft CR for information only  AI 8.30, 38.101-1, Rel-17, Cat-A |
| R4-2211175 | CR for TS 38.101-2: update of simultaneous RxTx capability for band combinations | Huawei, HiSilicon | Agenda 8.31  Work item code: NR\_RF\_FR2\_req\_enh-Core  Category F Rel-16 |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207992 | R4-2210769 | Draft CR to TS 38.101-1 V17.5.0 on introducing missing MPR for NR-U PC5 UL MIMO for n46, n96 and n102 | Skyworks Solutions Inc. | Revised |  |
| R4-2208388 | R4-2210770 | Draft CR for n95, n97, n98 and n28 UL MIMO | CMCC | Revised |  |
| R4-2209743 | R4-2210771 | Big CR for TS 38.307: release independent for UL MIMO bands (R17) | Huawei, HiSilicon | Revised |  |
| R4-2207693 | R4-2210772 | draft CR to 38.101-1 on new column for mandatory simultaneous RxTx | Apple | Revised |  |
| R4-2207694 | R4-2210773 | draft CR to 38.101-3 on new column for mandatory simultaneous RxTx | Apple | Revised |  |
| R4-2208679 |  | Simultaneous Rx/Tx capability for FR1+FR1 FDD-TDD band combination | ZTE Corporation | Noted |  |
| R4-2208850 |  | Continue discussion on simultaneous RxTx | MediaTek Inc. | Noted |  |
| R4-2208854 | R4-2210774 | Draft CR to 38101-1-h50 for SUL combos supporting simultaneous RxTx correction | MediaTek Inc. | Revised |  |
| R4-2208873 |  | Draft CR for clarification on per band pair simultaneous RxTx capability for DC TS 38.101-1 | NTT DOCOMO, INC | Endorsed |  |
| R4-2209014 | R4-2210775 | Big CR to 38.101-1: update of simultaneous RxTx capability for band combinations | Huawei, HiSilicon | Revised |  |
| R4-2209015 | R4-2210776 | Big CR to 38.101-2: update of simultaneous RxTx capability for band combinations | Huawei, HiSilicon | Revised |  |
| R4-2209016 |  | Big CR to 38.101-3: update of simultaneous RxTx capability for band combinations | Huawei, HiSilicon | Return to |  |
| R4-2209251 |  | TR 38.839 v0.3.0 | Huawei, HiSilicon | Agreed |  |
| R4-2209740 |  | TP for TR 38.839: update for simultaneous RxTx capability | Huawei, HiSilicon | Approved |  |
| R4-2209468 |  | CR on adding B48 for M1/M2/NB1/NB2 | Ericsson | Agreed |  |
| R4-2209469 |  | CR on adding B48 for M1/M2/NB1/NB2 | Ericsson | Agreed |  |
| R4-2209470 |  | CR on adding B48 for M1/M2/NB1/NB2 | Ericsson | Agreed |  |
| R4-2209471 |  | CR on adding B48 for M1/M2/NB1/NB2 | Ericsson | Agreed |  |
| R4-2209472 |  | CR on adding B48 for NB1/NB2 | Ericsson | Agreed |  |
| R4-2209473 |  | CR on adding B48 for NB1/NB2 | Ericsson | Agreed |  |
| R4-2209474 |  | CR on adding B48 for M1 | Ericsson | Agreed |  |
| R4-2209479 |  | CR on adding B48 for M2 | Ericsson | Agreed |  |
| R4-2209483 |  | CR on adding B48 for NB1/NB2 | Ericsson | Agreed |  |
| R4-2209486 |  | new WID Additional LTE bands for UE category M1\_M2 \_NB1\_NB2 in Rel-18 | Ericsson | n/a | moved to AI 14.1 |
| R4-2208677 |  | Discussion and reply LS on UE capability for 16QAM for NB-IoT | Qualcomm Incorporated | Noted |  |
| R4-2209487 |  | LS response on UE capability for 16QAM for NB-IoT | Ericsson | Noted |  |
| R4-2209714 |  | Discussion on UE capability for 16QAM for NB-IoT | Nokia, Nokia Shanghai Bell | Noted |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210571 |  | Reply LS on UE capability for 16QAM for NB-IoT | Ericsson | Approved |  |
| R4-2211155 |  | CR for updating the note of mandatory simultaneous Rx/Tx capability for FR1 NR-CA combinations (R16) | KDDI | Agreed |  |
| R4-2211156 |  | CR for updating the note of mandatory simultaneous Rx/Tx capability for FR1 NR-CA combinations (R17) | KDDI | Agreed |  |
| R4-2211175 |  | CR for TS 38.101-2: update of simultaneous RxTx capability for band combinations | Huawei, HiSilicon | Agreed |  |
| R4-2210769 |  | Draft CR to TS 38.101-1 V17.5.0 on introducing missing MPR for NR-U PC5 UL MIMO for n46, n96 and n102 | Skyworks Solutions Inc. | Endorsed |  |
| R4-2210770 |  | Draft CR for n95, n97, n98 and n28 UL MIMO | CMCC | Endorsed |  |
| R4-2210771 |  | Big CR for TS 38.307: release independent for UL MIMO bands (R17) | Huawei, HiSilicon | Agreed |  |
| R4-2210772 |  | draft CR to 38.101-1 on new column for mandatory simultaneous RxTx | Apple | Not pursued |  |
| R4-2210773 |  | draft CR to 38.101-3 on new column for mandatory simultaneous RxTx | Apple | Not pursued |  |
| R4-2210774 |  | Draft CR to 38101-1-h50 for SUL combos supporting simultaneous RxTx correction | MediaTek Inc. | Not pursued |  |
| R4-2210775 |  | Big CR to 38.101-1: update of simultaneous RxTx capability for band combinations | Huawei, HiSilicon | Agreed |  |
| R4-2210776 |  | Big CR to 38.101-2: update of simultaneous RxTx capability for band combinations | Huawei, HiSilicon | Agreed |  |
| R4-2209016 |  | Big CR to 38.101-3: update of simultaneous RxTx capability for band combinations | Huawei, HiSilicon | Agreed |  |

**R4-2210571 Reply LS on UE capability for 16QAM for NB-IoT**

*Type: other For: Approval  
 Source: Ericsson*

Huawei: we think there is no sufficient technical justification to support the option. The typical way in 3GPP should be based on data analysis. But we could accept it as compromise.

Nokia: justification is not provided. We can leave it for uplink and agree per-UE for downlink. We also discussed the selection of bands for the per-band signaling. For DL, we can agree on per-UE.

Qualcomm: This NB-IoT will use low cost solution. It is too risky for UE to use per-UE capability. If we have this per-UE, UE has to support all the bands. Considering this, we have some compromise for DL for per-UE. For uplink, we still want per-band. The current propsal is the compromise for UE. We do nto think overhead is a big issue here.

Nokia: we can compromise.

**Decision: Approved.**

**R4-2211155 CR for updating the note of mandatory simultaneous Rx/Tx capability for FR1 NR-CA combinations (R16)**

*Type: CR For: Agreement  
 38.101-1 v16.x.x CR-xxx rev Cat: F (Rel-16)  
  
 Source: KDDI*

**Decision: Agreed.**

**R4-2211156 CR for updating the note of mandatory simultaneous Rx/Tx capability for FR1 NR-CA combinations (R17)**

*Type: CR For: Agreement  
 38.101-1 v17.x.x CR-xxx rev Cat: F (Rel-17)  
  
 Source: KDDI*

**Decision: Agreed.**

**GTW on May 13**

**Issue 4-1-1: 16QAM UE capability**

**UE capabilities for downlink 16-QAM (FG 1-1) and uplink 16-QAM for NB-IoT (FG 1-2) should be per band or per-UE.**

* Proposals
  + Option 1: Both FG 1-1 and FG 1-2 should be per-band.
  + Option 2: Both FG 1-1 and FG 1-2 should be per-UE.
  + Option 3: FG 1-1 is per-UE and FG 1-2 is per-band.
  + Option 4: Others (please propose)
* Recommended WF
  + TBA

**Agreement:** Down-select to option 2 and 3.

#### 8.30.1 Rapporteur Input (WID/TR/CR)

**R4-2209741 Big CR for TS38.101-1: introduction of new UL MIMO bands**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1107 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Reserved big CR to capture the agreed band combinations in RAN4#103e.

**Decision:** The document was **for email approval**.

**R4-2209742 revised WID Additional NR bands for UL-MIMO in Rel-17**

*Type: WID revised For: Endorsement  
 Source: Huawei, HiSilicon*

**Abstract:**

Reserved WID to reflect the progress in RAN4#103e.

**Decision:** The document was **for email approval**.

**R4-2209743 Big CR for TS 38.307: release independent for UL MIMO bands (R17)**

*Type: CR For: Agreement  
 38.307 v17.5.0 CR-0100 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210771 (from R4-2209743).**

**R4-2210771 Big CR for TS 38.307: release independent for UL MIMO bands (R17)**

*Type: CR For: Agreement  
 38.307 v17.5.0 CR-0100 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

#### 8.30.2 UE RF requirements

**R4-2207992 Draft CR to TS 38.101-1 V17.5.0 on introducing missing MPR for NR-U PC5 UL MIMO for n46, n96 and n102**

*Type: draftCR For: Agreement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Introducing missing MPR for NR-U UL MIMO for band n46, n96 and n102 and eliminate duplication of inter-band power class with NRU in both NR and NRU sections.

**Decision: Revised to R4-2210769 (from R4-2207992).**

**R4-2210769 Draft CR to TS 38.101-1 V17.5.0 on introducing missing MPR for NR-U PC5 UL MIMO for n46, n96 and n102**

*Type: draftCR For: Agreement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Introducing missing MPR for NR-U UL MIMO for band n46, n96 and n102 and eliminate duplication of inter-band power class with NRU in both NR and NRU sections.

**Decision: Endorsed.**

**R4-2208388 Draft CR for n95, n97, n98 and n28 UL MIMO**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: CMCC*

**Decision: Revised to R4-2210770 (from R4-2208388).**

**R4-2210770 Draft CR for n95, n97, n98 and n28 UL MIMO**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: CMCC*

**Decision: Endorsed.**

### 8.31 Simultaneous Rx/Tx band combinations for CA, SUL, MR-DC and NR-DC

**R4-2211175 CR for TS 38.101-2: update of simultaneous RxTx capability for band combinations**

*Type: CR For: Agreement  
 38.101-1 v16.x.0 CR-xxxx rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

#### 8.31.1 Rapporteur Input (WID/TR/CR)

**R4-2209014 Big CR to 38.101-1: update of simultaneous RxTx capability for band combinations**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1081 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210775 (from R4-2209014).**

**R4-2210775 Big CR to 38.101-1: update of simultaneous RxTx capability for band combinations**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1081 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2209015 Big CR to 38.101-2: update of simultaneous RxTx capability for band combinations**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0458 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210776 (from R4-2209015).**

**R4-2210776 Big CR to 38.101-2: update of simultaneous RxTx capability for band combinations**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0458 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2209016 Big CR to 38.101-3: update of simultaneous RxTx capability for band combinations**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0719 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2209251 TR 38.839 v0.3.0**

*Type: draft TR For: Agreement  
 38.839 v0.3.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

#### 8.31.2 Identify simultaneous Rx/Tx capabilities for band combinations

**R4-2207693 draft CR to 38.101-1 on new column for mandatory simultaneous RxTx**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2210772 (from R4-2207693).**

**R4-2210772 draft CR to 38.101-1 on new column for mandatory simultaneous RxTx**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Not pursued.**

**R4-2207694 draft CR to 38.101-3 on new column for mandatory simultaneous RxTx**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2210773 (from R4-2207694).**

**R4-2210773 draft CR to 38.101-3 on new column for mandatory simultaneous RxTx**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Not pursued.**

#### 8.31.3 FR2 band combinations with simultaneous Rx/Tx

#### 8.31.4 Define rules for simultaneous Rx/Tx capabilities

**R4-2208679 Simultaneous Rx/Tx capability for FR1+FR1 FDD-TDD band combination**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208850 Continue discussion on simultaneous RxTx**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2208854 Draft CR to 38101-1-h50 for SUL combos supporting simultaneous RxTx correction**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Revised to R4-2210774 (from R4-2208854).**

**R4-2210774 Draft CR to 38101-1-h50 for SUL combos supporting simultaneous RxTx correction**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Not pursued.**

**R4-2208873 Draft CR for clarification on per band pair simultaneous RxTx capability for DC TS 38.101-1**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: NTT DOCOMO, INC*

**Abstract:**

This CR is resubmission of endorsed draft CR R4-2206487 which was not implemented correctly in TS 38.101-1 x17.5.0.

**Decision: Endorsed.**

**R4-2209740 TP for TR 38.839: update for simultaneous RxTx capability**

*Type: pCR For: Approval  
 38.839 v0.3.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

## 9 Rel-17 non-spectrum related work items for NR

### 9.1 Multiple Input Multiple Output (MIMO) Over-the-Air (OTA) requirements for NR UEs

#### 9.1.1 General

#### 9.1.2 Performance requirements

##### 9.1.2.1 Lab alignment for FR1

##### 9.1.2.2 Performance Requirements for FR1

##### 9.1.2.3 Performance Requirements for FR2

##### 9.1.2.4 MU assessment for FR1 and FR2

#### 9.1.3 Testing methodologies

##### 9.1.3.1 Testing parameters for Performance

##### 9.1.3.2 Optimization of test methodologies

##### 9.1.3.3 Channel model validation

### 9.2 Introduction of UE TRP (Total Radiated Power) and TRS (Total Radiated Sensitivity) requirements and test methodologies for FR1 (NR SA and EN-DC)

#### 9.2.1 General and work plan

#### 9.2.2 Test methodology maintenance

##### 9.2.2.1 SA test methodology

##### 9.2.2.2 EN-DC test methodology

##### 9.2.2.3 UE with multiple antennas test methodology

##### 9.2.2.4 Test time reduction

#### 9.2.3 Performance requirements

##### 9.2.3.1 Framework for lab alignment and requirements

##### 9.2.3.2 SA requirements

##### 9.2.3.3 EN-DC requirements

### 9.3 RF requirements enhancement for NR frequency range 1 (FR1)

#### 9.3.1 RF core requirement maintenance

**[103-e][107] NR\_RF\_FR1\_enh\_maintenance\_IntraHPUE, AI 9.3.1, 8.28 – Ye Liu**

**R4-2210243 Email discussion summary for [103-e][107] NR\_RF\_FR1\_enh\_maintenance\_IntraHPUE**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210443 (from R4-2210243).**

**R4-2210443 Email discussion summary for [103-e][107] NR\_RF\_FR1\_enh\_maintenance\_IntraHPUE**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210547 | CR for TS 38.101-1: Removing square brackets for Intra-band NC UL CA requirements | vivo | A formal CR based on [**R4-2208598**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208598.zip). CR number is needed.  AI 9.3.1 formal CR Cat-F Rel-17 |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2207865](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207865.zip) | R4-2210723 | CR: Update of UE capability and RRC parameter name for Tx switching | China Telecom | Revised |  |
| [R4-2208598](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208598.zip) |  | Removing square brackets for Intra-band NC UL CA requirments | vivo | Endorsed | A formal Rel-17 CR is needed. |
| [R4-2209744](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209744.zip) | R4-2210724 | Big CR to TS 38.307: intra-band CA with MIMO requirements (R17) | Huawei, HiSilicon | Revised |  |
| [R4-2209745](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209745.zip) |  | CR to TS 38.101-1: update of signaling for Tx switching (R17) | Huawei, HiSilicon | Not Pursued |  |
| [R4-2209754](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209754.zip) |  | On requirements for high power UE for NR TDD intra-band CA in FR1 | Huawei, HiSilicon | Noted |  |
| [R4-2209755](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209755.zip) | R4-2210725 | Big CR for TS 38.101-1: Introduce high power UE for NR TDD intra-band CA in FR1 | Huawei, HiSilicon | Revised |  |
| [R4-2209756](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209756.zip) |  | Revised WID for high power UE for NR TDD intra-band CA in FR1 | Huawei, HiSilicon | Noted |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210547 |  | CR for TS 38.101-1: Removing square brackets for Intra-band NC UL CA requirements | vivo | Agreed |  |
| [R4-2207865](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207865.zip) | R4-2210723 | CR: Update of UE capability and RRC parameter name for Tx switching | China Telecom | Agreed |  |
| [R4-2209744](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209744.zip) | R4-2210724 | Big CR to TS 38.307: intra-band CA with MIMO requirements (R17) | Huawei, HiSilicon | Agreed |  |
| [R4-2209755](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209755.zip) | R4-2210725 | Big CR for TS 38.101-1: Introduce high power UE for NR TDD intra-band CA in FR1 | Huawei, HiSilicon | Agreed |  |

**GTW on May-18**

Agreement: The draft CR of Revised CR\_Update of capability name and RRC parameter for Tx switching\_v1 is agreeable.

Agreement: The draft CR of REV R4-2209744 Big CR to TS 38.307 intra-band CA with MIMO requirements (R17) is agreeable.

Agreement: The draft CR of REV R4-2209755 Big CR for TS 38.101-1 HPUE for NR TDD CA\_r2 is agreeable.

----------------------------------------------------------------------------------------------------------------------------

**R4-2207865 CR: Update of UE capability and RRC parameter name for Tx switching**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1051 rev Cat: F (Rel-17)  
  
 Source: China Telecom*

**Decision: Revised to R4-2210723 (from R4-2207865).**

**R4-2210723 CR: Update of UE capability and RRC parameter name for Tx switching**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1051 rev Cat: F (Rel-17)  
  
 Source: China Telecom*

**Decision: Agreed.**

**R4-2208598 Removing square brackets for Intra-band NC UL CA requirments**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2209744 Big CR to TS 38.307: intra-band CA with MIMO requirements (R17)**

*Type: CR For: Agreement  
 38.307 v17.5.0 CR-0101 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210724 (from R4-2209744).**

**R4-2210724 Big CR to TS 38.307: intra-band CA with MIMO requirements (R17)**

*Type: CR For: Agreement  
 38.307 v17.5.0 CR-0101 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2209745 CR to TS 38.101-1: update of signaling for Tx switching (R17)**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1108 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Not pursued.**

#### 9.3.2 RRM core requirement maintenance

**[103-e][205] NR\_RF\_FR1\_enh\_RRM, AI 9.3.2, 9.3.3 – Han Jing**

**R4-2210277 Email discussion summary for [103-e][205] NR\_RF\_FR1\_enh\_RRM**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210474 (from R4-2210277).**

**R4-2210474 Email discussion summary for [103-e][205] NR\_RF\_FR1\_enh\_RRM**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207867 | R4-2210990 | Draft CR: Test case for DL interruptions at 2Tx-2Tx switching between two uplink carriers in FDD+TDD and TDD+TDD inter-band CA | China Telecom | Revised |  |
| R4-2208958 | R4-2210991 | Test case for R17 Tx switching enhancement | Huawei | Revised |  |
| R4-2208389 | R4-2210992 | Draft CR for introducing test cases for DL Interruptions at UE switching between two uplink bands with two transmit antenna connectors for UL inter-band CA (section A.6.5.7.1C, A.6.5.7.2C) | CMCC | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210990 (revision of R4-2207867) |  | Draft CR: Test case for DL interruptions at 2Tx-2Tx switching between two uplink carriers in FDD+TDD and TDD+TDD inter-band CA | China Telecom | Endorsed |  |
| R4-2210991 (revision of R4-2208958) |  | Test case for R17 Tx switching enhancement | Huawei | Approved |  |
| R4-2210992 (revision of R4-2208389) |  | Draft CR for introducing test cases for DL Interruptions at UE switching between two uplink bands with two transmit antenna connectors for UL inter-band CA (section A.6.5.7.1C, A.6.5.7.2C) | CMCC | Endorsed |  |

#### 9.3.3 RRM performance requirements

**R4-2207867 Draft CR: Test case for DL interruptions at 2Tx-2Tx switching between two uplink carriers in FDD+TDD and TDD+TDD inter-band CA**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: China Telecom*

**Decision: Revised to R4-2210990 (from R4-2207867).**

**R4-2210990 Draft CR: Test case for DL interruptions at 2Tx-2Tx switching between two uplink carriers in FDD+TDD and TDD+TDD inter-band CA**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: China Telecom*

**Decision: Endorsed.**

**R4-2208389 Draft CR for introducing test cases for DL Interruptions at UE switching between two uplink bands with two transmit antenna connectors for UL inter-band CA (section A.6.5.7.1C, A.6.5.7.2C)**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: CMCC*

**Decision: Revised to R4-2210992 (from R4-2208389).**

**R4-2210992 Draft CR for introducing test cases for DL Interruptions at UE switching between two uplink bands with two transmit antenna connectors for UL inter-band CA (section A.6.5.7.1C, A.6.5.7.2C)**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: CMCC*

**Decision: Endorsed.**

**R4-2208958 Test case for R17 Tx switching enhancement**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210991 (from R4-2208958).**

**R4-2210991 Test case for R17 Tx switching enhancement**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Approved.**

### 9.4 NR RF requirement enhancements for frequency range 2 (FR2)

#### 9.4.1 General

**[103-e][128] NR\_RF\_FR2\_enh2\_Part\_1, AI 9.4.1, 9.4.2 – Petri Vasenkari**

**R4-2210263 Email discussion summary for [103-e][128] NR\_RF\_FR2\_enh2\_Part\_1**

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

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210460 (from R4-2210263).**

**R4-2210460 Email discussion summary for [103-e][128] NR\_RF\_FR2\_enh2\_Part\_1**

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

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210573 | WF on FR2 CA relaxations | Nokia |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2208545](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208545.zip) |  | PC2 RF requirements for inter-band CA\_n257A\_n259A based on IBM | LG Electronics, KT, LG Uplus | Noted |  |
| R4-2208546 |  | CR on FR2-1 PC2 in n259 for supporting PC2 CA\_n257-n259 | LG Electronics, KT, LG Uplus | withdrawn |  |
| [R4-2208644](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208644.zip) |  | CR on FR2-1 PC2 in n259 for supporting PC2 CA\_n257-n259 | LG Electronics, KT, LG Uplus | Merged with R4-2207638 |  |
| [R4-2207637](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207637.zip) |  | On delta(RIB) for n258+n261 DL inter-CA | Qualcomm Incorporated | Noted |  |
| [R4-2207638](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207638.zip) | R4-2210777 | CR to 38.101-2: FR2+FR2 IBM DLCA for PC1/2/5 | Qualcomm, Nokia, Verizon, LGE | Revised |  |
| [R4-2207710](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207710.zip) |  | UE DL requirements for IBM | Sony, Ericsson | Noted |  |
| [R4-2208309](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208309.zip) |  | Discussion on UE relaxation values for inter-band DL CA for CA\_n258-n261 | MediaTek Beijing Inc. | Noted |  |
| [R4-2208484](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208484.zip) |  | EIS requirements for IBM based DL CA\_n258-n261 | Samsung | Noted |  |
| [R4-2208607](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208607.zip) |  | Discussion on requirements of n258-n261 | vivo | Noted |  |
| [R4-2208682](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208682.zip) |  | Discussion on relaxation value FR2 inter-band UL CA | ZTE Corporation | Noted |  |
| [R4-2208683](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208683.zip) |  | Discussion on IBM inter-band DL CA\_n258-n261 | ZTE Corporation | Noted |  |
| [R4-2208750](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208750.zip) |  | Introduction of requirements for DL inter-band CA for CA\_n258-n261 | Ericsson, Sony | Merged with R4-2209106 |  |
| [R4-2208862](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208862.zip) | R4-2210778 | Discussion on delta RIB for CA\_n258-n261 based on IBM | Xiaomi | Noted |  |
| [R4-2209106](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209106.zip) | R4-2210779 | Addition of downlink CA\_n258-n261 configuration | Nokia, Qualcomm Inc | Revised |  |
| [R4-2209321](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209321.zip) |  | UE relaxation for CA\_n258-n261 with IBM | Apple | Noted |  |
| [R4-2209427](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209427.zip) |  | R17 FR2 Inter-band DL CA requirements for n258+n261 | OPPO | Noted |  |
| [R4-2207635](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207635.zip) |  | On MPR and delta(TIB) for FR2+FR2 ULCA | Qualcomm Incorporated | Noted |  |
| [R4-2207636](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207636.zip) | R4-2210780 | CR to 38.101-2 FR2+FR2 ULCA Feature | Qualcomm, Nokia, Verizon, LGE | Revised |  |
| [R4-2207711](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207711.zip) |  | UE UL CA requirements based on IBM | Sony, Ericsson | Noted |  |
| [R4-2208311](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208311.zip) |  | Discussion on inter-band UL CA for PC1 CA\_n260-n261 and PC5 CA\_n257A-n259A | MediaTek Beijing Inc. | Noted |  |
| [R4-2208485](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208485.zip) |  | EIRP requirements for IBM based UL CA for FWA | Samsung | Noted |  |
| [R4-2208606](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208606.zip) |  | Discussion on FR2 inter-band UL CA | vivo | Noted |  |
| [R4-2208863](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208863.zip) |  | RF requirements for inter-band UL CA\_n260-n261 and CA\_n257-n259 based on IBM | Xiaomi | Noted |  |
| [R4-2209429](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209429.zip) |  | R17 FR2 Inter-band UL CA requirements | OPPO | Noted |  |
| [R4-2210192](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210192.zip) |  | TIB for inter-band UL CA with IBM | NTT DOCOMO, INC. | Noted |  |
| [R4-2210193](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210193.zip) |  | CR to TS38.101-2 TIB for inter-band UL CA | NTT DOCOMO, INC. | Merged with R4-2207636 |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210573 |  | WF on FR2 CA relaxations | Nokia | Approved |  |
| [R4-2207638](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207638.zip) | R4-2210777 | CR to 38.101-2: FR2+FR2 IBM DLCA for PC1/2/5 | Qualcomm, Nokia, Verizon, LGE | Agreed | Capture agreed values in WF |
| [R4-2209106](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209106.zip) | R4-2210779 | Addition of downlink CA\_n258-n261 configuration | Nokia, Qualcomm Inc | Agreed |  |
| [R4-2207636](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207636.zip) | R4-2210780 | CR to 38.101-2 FR2+FR2 ULCA Feature | Qualcomm, Nokia, Verizon, LGE | Agreed | Capture agreed values in WF |

**R4-2210573 WF on FR2 CA relaxations**

*Type: other For: Approval  
 Source: Nokia*

**Decision: Approved.**

**GTW on May-11**

**Sub-topic 1-1: DL CA**

**Issue 1-1-X (new): There are different views in draft CRs, if MBR is added to PC1/2/5.**

**Issue 1-1-4: Is the following relaxation values agreeable?**

Relaxation values for n258-n261 PC3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | ΔRIB,P,n (dB) | | ΔRIB,S,n (dB) | |
|  | n258 | n261 | n258 | n261 |
| Qualcomm, Nokia | 2.0 | 2.0 | 3.5 | 3.5 |
| Sony, Ericsson | 1.7 | 1.7 | 3.2 | 3.2 |
| vivo | 3.0 | 3.0 | 3.0 | 3.0 |
| ZTE | [3.5] | [3.5] | [2.5] | [2.5] |
| Xiaomi | 3.5 | 3.5 | 4.0 | 4.0 |
| Apple | 3.5 | 3.5 | 3.5 | 3.5 |
| OPPO | 3.5 | 3.5 | 3.5 | 3.5 |
| MTK | FFS | FFS | FFS | FFS |
| Samsung  (similar or the same value) | X | X | X | X |
| **Average** | **2.96** | **2.96** | **3.31** | **3.31** |

Relaxation values for n260-n261 PC1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | ΔRIB,P,n (dB) | | ΔRIB,S,n (dB) | |
|  | n257 | n259 | n257 | n259 |
| Sony, Ericsson, [Qualcomm, Nokia, Verizon, LGE] | 1 | 1 | 1.7 | 1.7 |

Relaxation values for n257-n259 PC2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | ΔRIB,P,n (dB) | | ΔRIB,S,n (dB) | |
|  | n257 | n259 | n257 | n259 |
| LGE,  [Qualcomm, Nokia, Verizon] | 1.7 | 1.5 | 3.7 | 3.5 |

Relaxation values for n260-n261 PC5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | ΔRIB,P,n (dB) | | ΔRIB,S,n (dB) | |
|  | n257 | n259 | n257 | n259 |
| Sony, Ericsson,  [Qualcomm, Nokia, Verizon, LGE] | 1.7 | 1.5 | 2.4 | 2.2 |

**<Way forward/Agreement>**:

* [MBR is not introduced to PC1/2/5 in the single band (non-CA) requirement, as it is already from Rel-15. CA relaxations natively include MBR aspects in ΔRIB,P,n and ΔRIB,S,n as already in PC3 DL CA. This shall be applied to UL CA as well.]

**Discussions:**

OPPO: MBR was not introduced in PC1/2/5. But it does not mean there is no degradation in the field. We can consider the impact of MBR and we propose to reuse the values of PC3.

Qualcomm: MBR was introduced for PC5. Let us concentrate on PC1/2. It impacts the legacy requirements if we introduce the MBR in Rel-17. One possible way is to introduce the equalvent requirement and there should be not net change in legacy requirements.

Vivo: We share the similar view from OPPO. The similar antenna assumption is used. We proposed using MBR requirements of PC5.

LGE: we are fine to introduce MBR. And we propose MBR value for PC2.

Samsung: Multiple-band impacts all the power classes. For PC1 and PC2, we think it is difficult to modify Rel-15. Vivo proposal to reuse 1 from PC5 is better.

ZTE: We are fine to introduce MBR requirement. We have issue for clarification. If MBR is not introduced, does it mean no multiple band operation?

Verizon: We share the view of Qualcomm. We should consider the legacy requirement. Maybe the legacy requirement needs be tightened.

Sony: we share the concerns from Qualcomm and Verizon. MBR impacts all the power classes. But it comes from the limitation of form factor. For PC1, there is no such limitation.

Huawei: considering the legacy issue, we may not introduce the MBR. But we agree that the value is not zero and should be included.

Mediatek: MBR should be considered in the framework and should not be zero.

Qualcomm: we can change the ERIP and receiver requirement at the same time.

OPPO: In Rel-15, we do not consider the multiple band.

Qualcomm: In Rel-15 the multiple band relaxation was discussed after PC1 was introduced. We did not revisit the agreement related to MBR.

Ericsson: multiple band relaxation causes a lot of confusion in RAN5. Our understanding is that this requirement is due to small form factor. It is difficult to track the MBR numbers if including it in delat\_RIB.

Qualcomm: share the view as Ericsson.

Verizon: We share the view from Ericsson and Qualcomm.

Samsung: MBR is for antenna switching.

Sony: we can use a document to capture the MBR.

**Agreement:**

* Alt 1: For PC1/2, CA relaxations add MBR aspects into ΔRIB and ΔTIB. Capture the components of ΔRIB and ΔTIB either in the CR cover page or in CR as informative note.
* [Relaxations values ΔRIB,P,n and ΔRIB,S,n are agreed according to the tables above.]

**Discussions:**

Qualcomm: Do not need consider PSD issue for IBM.

Apple: Relaxation for L+L should be higher than L+H. We should take into the PSD difference. We see the 3dB higher PSD. We should define 3.5dB for n258+n261 as compromise.

Sony: we support the averaged value. To Samsung and Apple, when introducing the requirement in Rel-17, we keep 1dB margin for UE implementation. The CC can be closed to each other, which brings the additional impact. For peak relaxation, we do not need such much relaxation.

Mediatek: The requirement only applies there is no simultaneous Rx/Tx operation. From UE implementation, the relaxation should be larger than L+H.

Ericsson: why is the peak relaxation the same as spherical coverage? There will be DL coverage performance impact. IBM capable UE can support non-collocated deployment.

OPPO: for L+L, PSD is 3dB lower than L+N. The interference is higher since CC is closed to each other. The relaxation factor is the same as inter-band IBM. All the factors are the same except for PSD. From this perspective, Samsung, Apple comments are valid

Vivo: PSD interference has been incorporated. We can accept the average value or reuse the L+H values.

Samsung: To Ericsson, the reason is the PSD difference impacts peak much higher than spherical coverage. The other reason is that PSD difference impact is not severe as L+H.

Xiaomi: Agree with Samsung.

Huawei: Agree with OPPO and Samsung. PSD impact is large. We are fine with proposal of Apple, 0.5dB.

Qualcomm: It is incorrect that inter-band situation has higher PSD difference than the ACS requirements. Therefore it is not valid argument.

**Agreement:**

* Relaxation values for n258-n261 PC3

|  |  |  |  |
| --- | --- | --- | --- |
| ΔRIB,P,n (dB) | | ΔRIB,S,n (dB) | |
| n258 | n261 | n258 | n261 |
| **3.5** | **3.5** | **3.5** | **3.5** |

Note: there is no simultaneous Rx/Tx operation.

**Discussions:**

OPPO: the relaxation is much smaller than PC3. But the factors impacting the relaxation are the same as PC3.

Qualcomm: RAN4 should finalize the DL CA requirements according the agreement. To OPPO, there is 1dB desens. The rest is due to antenna mismatch, i.e., R\_overlapping. The coverage is identical since collocated. There is less impact of R\_overlapping compared to PC3.

Xiaomi: for PC1 and PC5, we should consider the same impact factor compared to PC3. We propose to reuse the same value as PC3.

Samsung: MBR value should be added, i.e., 0.7. MBR is for switching mode and CA is for simultaneous mode. The relaxation should be added on top of MBR. The hardware impact should be considered.

Vivo: The table does not include MBR. We need additional 0.7dB. And we also need impart. We propose to add 1.5dB.

Sony: we do not need additional impairment margin. For FWA, it can use better component. 1dB margin should be sufficient.

LGE: I am fine to consider PC5 MBR for PC1 and PC2.

Qualcomm: These values contains all the aspects in Rel-16. The mismatch is not considered in Rel-16.

Mediatek: suggest 3.5 as baseline and identify the difference.

Qualcomm: need following the systematically methodology.

Sony: we cannot set 3.5. Not happy with the random number.

**Topic #2: 9.4.2.1 Inter-band UL CA requirements**

**Sub-topic 2-1: Relaxation values**

**n257+n259**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | PC1 | | PC2 | | PC3 | | PC5 | |
|  |  | n257 | n259 | n257 | n259 | n257 | n259 | n257 | n259 |
| Qualcomm, [Nokia, Verizon, LGE] | delta(TIB\_peak) | MBR or 0 | | MBR or 0 | |  |  | MBR or 0 | |
| R\_overlap | 0.5 | | 2 | |  |  | 0.5 | |
| Sony, Ericsson | delta(TIB\_peak) |  |  |  |  |  |  | 0.7 | 0.5 |
| delta(TIB\_spherical) |  |  |  |  |  |  | 1.4 | 1.2 |
| MediaTek | delta(TIB\_peak) |  |  |  |  |  |  | ΔRIB,P,n – 1 dB | |
| delta(TIB\_spherical) |  |  |  |  |  |  | ∆RIB,S,n – 1 dB | |
| LGE | delta(TIB\_peak) |  |  | 0.7 | 0.5 |  |  |  | |
| delta(TIB\_spherical) |  |  | 2.7 | 2.5 |  |  |  | |
| vivo | delta(TIB\_peak) |  |  |  |  |  |  | 1.5 | |
| delta(TIB\_spherical) |  |  |  |  |  |  | 2.5 | |
| Xiaomi | delta(TIB\_peak) |  |  |  |  |  |  | 3.0 | |
| delta(TIB\_spherical) |  |  |  |  |  |  | 3.5 | |
| OPPO | delta(TIB\_peak) | 3 | | | | | | | |
| delta(TIB\_spherical) | 2.5 | | | | | | | |
| Docomo | delta(TIB\_peak) | TBD | TBD | TBD | TBD | 5.0 | | 0.7 | 0.5 |
| delta(TIB\_spherical) | TBD | TBD | TBD | TBD | 5.5 | | 1.2 | 1.0 |
| ZTE | delta(TIB\_peak) | MBR | | | | | | | |
| delta(TIB\_spherical) | ∆RIB,S,n – 1 dB | | | | | | | |
| **Average** | delta(TIB\_peak) |  |  | **1.85** | **1.75** |  |  | **1.48** | **1.41** |
| delta(TIB\_spherical) |  |  | **2.6** | **2.5** |  |  | **1.85** | **1.78** |

**Discussions:**

OPPO: MBR 0 is not reasonable.

Samsung: the R\_overlap value is too small. FWA is very senstive to misalignement for the beam.

LGE: for PC2, R\_overlap is 2dB.

Qualcomm: to Samsung, the impact is unique to company’s implementation.

Samsung: for FWA, the percentile is small. The spherical región is narrow. The boresight will be changed.

#### 9.4.2 UE RF requirements for inter-band CA

**R4-2208545 PC2 RF requirements for inter-band CA\_n257A\_n259A based on IBM**

*Type: discussion For: Discussion  
 Source: LG Electronics, KT, LG Uplus*

**Abstract:**

It discusses PC2 RF requirements for inter-band CA\_n257A\_n259A based on IBM.

**Decision: Noted.**

**R4-2208546 CR on FR2-1 PC2 in n259 for supporting PC2 CA\_n257-n259**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1068 rev Cat: B (Rel-17)  
  
 Source: LG Electronics, KT, LG Uplus*

**Abstract:**

It is CR to introduce FR2-1 PC2 RF requirements in n259 for supporting PC2 CA\_n257-n259.

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

**R4-2208644 CR on FR2-1 PC2 in n259 for supporting PC2 CA\_n257-n259**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0456 rev Cat: B (Rel-17)  
  
 Source: LG Electronics, KT, LG Uplus*

**Abstract:**

It is CR to introduce FR2-1 PC2 RF requirements in n259 for supporting PC2 CA\_n257-n259.

**Decision: Merged (with R4-2207638).**

##### 9.4.2.1 Inter-band DL CA requirements

###### 9.4.2.1.1 UE relaxation values for DL CA with IBM for CA\_n258-n261

**R4-2207637 On delta(RIB) for n258+n261 DL inter-CA**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

delta(RIB) proposal for n258+n261 based on IBM assumption

**Decision: Noted.**

**R4-2207638 CR to 38.101-2: FR2+FR2 IBM DLCA for PC1/2/5**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0451 rev Cat: B (Rel-17)  
  
 Source: Qualcomm, Nokia, Verizon, LGE*

**Abstract:**

Cat B feature CR to introduce missing power classes and band combinations that have been enabled for FR2 ULCA

**Decision: Revised to R4-2210777 (from R4-2207638).**

**R4-2210777 CR to 38.101-2: FR2+FR2 IBM DLCA for PC1/2/5**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0451 rev Cat: B (Rel-17)  
  
 Source: Qualcomm, Nokia, Verizon, LGE*

**Abstract:**

Cat B feature CR to introduce missing power classes and band combinations that have been enabled for FR2 ULCA

**Decision: Agreed.**

**R4-2207710 UE DL requirements for IBM**

*Type: other For: Approval  
 Source: Sony, Ericsson*

**Decision: Noted.**

**R4-2208309 Discussion on UE relaxation values for inter-band DL CA for CA\_n258-n261**

*Type: discussion For: Approval  
 Source: MediaTek Beijing Inc.*

**Decision: Noted.**

**R4-2208484 EIS requirements for IBM based DL CA\_n258-n261**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2208607 Discussion on requirements of n258-n261**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208682 Discussion on relaxation value FR2 inter-band UL CA**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208683 Discussion on IBM inter-band DL CA\_n258-n261**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208750 Introduction of requirements for DL inter-band CA for CA\_n258-n261**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, Sony*

**Abstract:**

Draft CR to introduce requirements for DL CA based on CBM within the same and different frequency groups

**Decision: Merged (with R4-2209106).**

**R4-2208862 Discussion on delta RIB for CA\_n258-n261 based on IBM**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Decision: Revised to R4-2210778 (from R4-2208862).**

**R4-2210778 Discussion on delta RIB for CA\_n258-n261 based on IBM**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2209106 Addition of downlink CA\_n258-n261 configuration**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0459 rev Cat: B (Rel-17)  
  
 Source: Nokia, Qualcomm Inc*

**Decision: Revised to R4-2210779 (from R4-2209106).**

**R4-2210779 Addition of downlink CA\_n258-n261 configuration**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0459 rev Cat: B (Rel-17)  
  
 Source: Nokia, Qualcomm Inc*

**Decision: Agreed.**

**R4-2209321 UE relaxation for CA\_n258-n261 with IBM**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2209427 R17 FR2 Inter-band DL CA requirements for n258+n261**

*Type: discussion For: Approval  
 Source: OPPO*

**Decision: Noted.**

##### 9.4.2.2 Inter-band UL CA requirements

###### 9.4.2.2.1 UL CA MPR, relaxation values and Pcmax handling for CA\_n257A-n259A and CA\_n260-n261

**R4-2207635 On MPR and delta(TIB) for FR2+FR2 ULCA**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

We share our proposals for both delta(TIB) and MPR along with the underlying reasoning and analysis.

**Decision: Noted.**

**R4-2207636 CR to 38.101-2 FR2+FR2 ULCA Feature**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0450 rev Cat: B (Rel-17)  
  
 Source: Qualcomm, Nokia, Verizon, LGE*

**Abstract:**

Cat B feature CR

**Decision: Revised to R4-2210780 (from R4-2207636).**

**R4-2210780 CR to 38.101-2 FR2+FR2 ULCA Feature**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0450 rev Cat: B (Rel-17)  
  
 Source: Qualcomm, Nokia, Verizon, LGE*

**Abstract:**

Cat B feature CR

**Decision: Agreed.**

**R4-2207711 UE UL CA requirements based on IBM**

*Type: other For: Approval  
 Source: Sony, Ericsson*

**Decision: Noted.**

**R4-2208311 Discussion on inter-band UL CA for PC1 CA\_n260-n261 and PC5 CA\_n257A-n259A**

*Type: discussion For: Approval  
 Source: MediaTek Beijing Inc.*

**Decision: Noted.**

**R4-2208485 EIRP requirements for IBM based UL CA for FWA**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2208606 Discussion on FR2 inter-band UL CA**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208863 RF requirements for inter-band UL CA\_n260-n261 and CA\_n257-n259 based on IBM**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2209429 R17 FR2 Inter-band UL CA requirements**

*Type: discussion For: Approval  
 Source: OPPO*

**Decision: Noted.**

**R4-2210192 TIB for inter-band UL CA with IBM**

*Type: other For: Approval  
 Source: NTT DOCOMO, INC.*

**Abstract:**

To provide PC1/3/5 TIB for FR2 inter-band UL CA.

**Decision: Noted.**

**R4-2210193 CR to TS38.101-2 TIB for inter-band UL CA**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0464 rev Cat: B (Rel-17)  
  
 Source: NTT DOCOMO, INC.*

**Abstract:**

CR to provide PC1/3/5 TIB for FR2 inter-band UL CA.

**Decision: Merged (with R4-2210193).**

#### 9.4.3 UL gaps for self-calibration and monitoring

**[103-e][129] NR\_RF\_FR2\_enh2\_Part\_2, AI 9.4.3, 9.4.6.3, 9.4.7.2 – Yang Tang**

**R4-2210264 Email discussion summary for [103-e][129] NR\_RF\_FR2\_enh2\_Part\_2**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210461 (from R4-2210264).**

**R4-2210461 Email discussion summary for [103-e][129] NR\_RF\_FR2\_enh2\_Part\_2**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210574 | WF on UL gap for FR2 | Apple |  |
| R4-2210575 | LS on UL gap for FR2 | Apple | To: RAN2; Cc: RAN1 |
| R4-2210576 | Draft CR on RF related UL gap for FR2 (38.101-2) | Apple | Capture RF related agreements  on top of the endorsed CR R4-2206513 |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2207817](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207817.zip) |  | Draft CR for UL gap for Tx power management RRM aspect | Apple | Noted |  |
| [R4-2208591](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208591.zip) |  | CR for UL gaps for Tx power management | Nokia, Nokia Shanghai Bell | Noted |  |
| [R4-2208787](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208787.zip) |  | LS on priority for PHR including MPE indication | Nokia Corporation | Return to  after 2nd round |  |
| [R4-2210127](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210127.zip) | R4-2210781 | Draft CR on UL gaps for BPS | Apple, Ericsson, Nokia | Revised | Capture RRM related agreements on top of the endorsed CR R4-2206511 |
| [R4-2207706](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207706.zip) |  | draft CR on UL Gap RF requirements | Qualcomm Incorporated | Noted |  |
| [R4-2208875](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208875.zip) |  | Draft CR for UL gap for Tx power management RF aspect | Nokia Denmark | Noted |  |
| [R4-2209145](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209145.zip) |  | Draft CR to 38.101-2 on requirements for coherent UL MIMO | Huawei, HiSilicon | Return to  after 2nd round |  |
| [R4-2209154](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209154.zip) | R4-2211140 | Draft CR to add ‘Annex G Difference of relative phase and power errors’ for FR2 UL coherent MIMO | Anritsu Limited | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210574 | R4-2211221 | WF on UL gap for FR2 | Apple | Approved | Remove Section 3 UL coherent MIMO |
| R4-2210575 | R4-2211222 | LS on UL gap for FR2 | Apple | Approved |  |
| R4-2210576 |  | Draft CR on RF related UL gap for FR2 (38.101-2) | Apple | Endrosed |  |
| [R4-2208787](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208787.zip) |  | LS on priority for PHR including MPE indication | Nokia Corporation | Noted |  |
| R4-2210781 |  | Draft CR on UL gaps for BPS | Apple, Ericsson, Nokia | Endorsed | Capture RRM related agreements on top of the endorsed CR R4-2206511 |
| [R4-2209145](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209145.zip) |  | Draft CR to 38.101-2 on requirements for coherent UL MIMO | Huawei, HiSilicon | Postponed |  |
| R4-2211140  R4-2209155 (Cat-A)  R4-2209156 (Cat-A) |  | Draft CR to add ‘Annex G Difference of relative phase and power errors’ for FR2 UL coherent MIMO | Anritsu Limited | Endorsed |  |

**R4-2210574 WF on UL gap for FR2**

*Type: other For: Approval  
 Source: Apple*

**Decision: Revised to R4-2211221 (from R4-2210574).**

**R4-2211221 WF on UL gap for FR2**

*Type: other For: Approval  
 Source: Apple*

**Decision: Approved.**

**R4-2210575 LS on UL gap for FR2**

*Type: LSout For: Approval  
 Source: Apple*

**Decision: Revised to R4-2211222 (from R4-2210575).**

**R4-2211222 LS on UL gap for FR2**

*Type: LSout For: Approval  
 Source: Apple*

**Decision: Approved.**

**R4-2210576 Draft CR on RF related UL gap for FR2 (38.101-2)**

*Type: draftCR For: Endorsement  
 Source: Apple*

**Decision: Endorsed.**

**GTW on May-11**

**Sub-topic 1-1: On Step 3 in test procedure**

Open issues and candidate options before e-meeting:

* + Option 1: Step 3 is not needed (vivo, OPPO, Huawei )
  + Option 2: Step 3 is needed (Ericsson, Sony, Qualcomm)
  + Option 3: Step 3 is OK but it may be decoupled with UL gap discussion. (Apple, Huawei, Ericsson, Nokia, Sony)

**Discussions:**

Oppo: prefer option 1. It is not for UL gap feature. We do not see the value.

Vivo: Insist on option 1. It is not clear what UE will do if the related capability is absent.

Sony: we can accept Option 3. But uplink gap and uplink duty cycle are the measures for gNB.

Ericsson: As explained by Sony, it is related to P-MPR and unpredictable. By step 3, we have predictable UE behavior. Step 3 applies regardless whether UL gap is configured. We are fine to discuss it in the option 3. It is regardless how MPE is specified.

Qualcomm: related to how UE behave to the duty cycle. We should consider how UE behaves for duty cycle and UL gap together. Step 3 should be part of UL gap or separate CR or WI?

OPPO: we are also confused about option 3. What is the step 3 testing and what is the requirement for the test? RAN5 would be better place to discuss. Option 3 is not clear.

Nokia: Option 3 could be agreeable. We need more work. How do we need set duty cycle?

Apple: the motivation of option 3 is that the objective of step 3 is to test UE behavior when duty cycle is small enough and zero P-MPR is enough. Now we combine it with uplink gap, which is fine. But the requirement of step 3 is not only applicable to UL gap capable UE. Step 3 is one of the issue in the exception list. We thought it is difficult to reach agreement in the short time. With option 3, we can have enough time for discussion.

OPPO/vivo: we agree the P-MPR will decrease. But it is not relevant with this WI.

Qualcomm: is the assumption that UE supporting UL gap needs meet the output power requirement in rel-15?

OPPO: if we test step 3, it can be applied to UE supporting or not supporting UL gap feature.

**Agreement:** Step 3 discussion is decoupled with UL gap.

**Sub-topic 1-3: On P-bit indication**

Proposal: Do not mention P-bit usage in the RF requirements.

* + Yes: Qualcomm, OPPO, vivo
  + No: ZTE, Nokia, Sony, Ericsson, Apple
  + Proposal: Do not change the existing agreement in WF R4-2202417 “When UL gap is not configured/activated, P bit in PHR should be 1 during the UL gap test.”, unless consensus can be reached otherwise.

**Discussions:**

Moderator: to avoid the redundant test, RAN4 agreed the P-bit. Suggest to keep the previous agreement.

Huawei: I agree with moderator. We want to add a sentence. PHR can be configured during the test.

Agreement: When UL gap is not configured/activated and PHR is configured during the test, P bit in PHR shall be 1 during the UL gap test.

**Sub-topic 1-4: On RMC in Step 1 and 2**

* + Proposal: Add a text in to the requirement covering the duty cycle clause: RMC is chosen such that UL dutycycle is larger than maxUplinkDutyCycle-FR2 or set to 20 % if UE does not declare maxUplinkDutyCycle-FR2. (Qualcomm)
  + Proposal: new RMC can be introduced based on UL gap pattern configuration #1 and 3

**Table A.2.3-1: Additional reference channels parameters for TDD**

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | | Value | |
|  | | SCS 60 kHz (µ=2) | SCS 120 kHz (µ=3) |
| TDD Slot Configuration pattern (Note 1) | | DDDSUUUU | 7DS8U |
| Special Slot Configuration (Note 2) | | S=4D+6G+4U | S=12D+2G |
| referenceSubcarrierSpacing | | 60 kHz | 120 kHz |
| UL-DL configuration | dl-UL-TransmissionPeriodicity | 2 ms | 2 ms |
|  | nrofDownlinkSlots | 3 | 7 |
|  | nrofDownlinkSymbols | 4 | 12 |
|  | nrofUplinkSlot | 4 | 8 |
|  | nrofUplinkSymbols | 4 | 0 |
| Indexes of active UL slots | | mod(slot index, 40) = {36,…,39} | mod(slot index, 80) = {72,…,79} |
| Indexes of active UL slots for UL Gap test | | mod(slot index, 40) = {12,…,15, 36,…,39} | mod(slot index, 80) = {24,…,31 ,72,…,79} |
| Indexes of the UL slots for UL Gap when UL gap pattern configuration 3 (IE name for configurations) is configured | | mod(slot index,40)={7, 28} | mod(slot index, 80) = {15,56} |
| Indexes of the UL slots for UL Gap when UL gap pattern configuration 1 (IE name for configurations) is configured | | mod(slot index,160)={20, 21, 22,23, 28, 29,30,31} | mod(slot index, 320) = {8, … ,15} |
| NOTE 1: D denotes a slot with all DL symbols; S denotes a slot with a mix of DL, UL and guard symbols; U denotes a slot with all UL symbols. The field is for information.  NOTE 2: D, G, U denote DL, guard and UL symbols, respectively. The field is for information. | | | |

**Discussion:**

OPPO: when UE reports 100% duty cycle, there is no RMC for UE. What is the duty cycle here?

Apple: If UE reports 100%, then UL gap is not needed.

Qualcomm: OPPO is asking how to test 100% duty cycle but when discussing step 3 they commented not preferring test.

OPPO: it is related to testing configuration of uplink feature. What we comment is the test procedure and not related to previous discussion. Maybe one UE reports 100% and does not want gNB to restrict the uplink time. UL gap is also beneficial to such UE.

Apple: based on the spec, zero P-MPR is assumed for relative small duty cycle. 100% is to extreme.

**Sub-topic 1-5: On Tx-OFF power requirement**

* + Option 1: Add the following clarification to TS38.101-2 6.2: The measured peak EIRP PUMAX,f,c\_GAP\_ON measured during of the UL gap symbol is below TX\_OFF power. (Nokia)
  + Option 2: Add sentence the following sentence to the OFF power clause to cover the OFF power agreement: For UE indicating [IE UL Gap], UE will meet OFF power requirement defined in this clause in the UL Gap. (Qualcomm)
  + Proposal: UE will meet OFF power requirement defined in this clause for the band performing self-calibration in the activated UL Gap.

**Discussion:**

Oppo: should be human body detection in stead of band performing self-calibration?

ZTE: it is more general wording.

**Agreement:** UE will meet OFF power requirement defined in this clause for the band with activated UL Gap.

**Sub-topic 1-6: On UE capability for IBM**

Proposal: For IBM, the capability is per band per band combination. And remove the bracket

* + Yes: (Apple, OPPO, Huawei, Nokia)
  + NO and change to per UE based (vivo, )

**Discussions:**

Ericsson: Prefer to Per-UE and if there is problem identified, we can revist the agreement in the future. CBM is different since CBM has contiguous and non-contiguous.

ZTE: all the three combinations only include 2 bands. The per band per BS type is too complicated. Per UE is enough.

Vivo: Our concern is UE and BS does not benefit too much from the proposal. We still prefer per-UE.

Qualcomm: it should be per-band per BC.

Apple: we have agreement on CBM. And share the information with RAN2 and RAN2 works on it based on per-band per BC capability. It does not make sense that IBM is per UE while CBM is per band per BC. There is case in future where per-band per BC is useful.

OPPO: IBM is flexibility. Can we define as per-BC?

Apple: in terms of per-UE, UE has not possibility to use gap for one band and not use the gap for other band.

**Sub-topic 1-8: On the clarification of measured peak EIRP**

* + Proposal: Add the following clarification to TS38.101-2 6.2: The measured peak EIRP PUMAX,f,c\_GAP\_ON shall be measured outside of the UL gap symbol. (Nokia)

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | Isn’t this implied? EIRP can be measured only on the symbols with actual grant on them as define in the A.2.3 |
| Nokia | This clarification is needed in combination with TX OFF power requirements |
| Apple | We are OK to add this clarification in the CR if there is consensus. The measurement should be based on RMC with PUSCH scheduled. |

**Discussions:**

Qualcomm: why would we measure on the gap? This is redundant. What is the requirement introduced?

Nokia: It is straightforward understanding.

**Agreement:** Add the following clarification to TS38.101-2 6.2: The measured peak EIRP PUMAX,f,c\_GAP\_ON shall be measured outside of the UL gap symbol.

**Sub-topic 2-1: On the procedures to be prioritized over UL gap**

* + Option 1: the following procedures are prioritized (Ericsson)
    - When UL gaps are overlapping with CSI report during following procedures, UL gaps are dropped, and CSI reporting is prioritized, including SCell activation, SCell dormancy transition, TCI state switch (CSI (L1-RSRP) report) and UL spatial relation switch (CSI (L1-RSRP) report). UE to prioritize a periodic and semi-persistent CSI reports during SCell activation and other RRM procedures which require CSI report to finish the procedure. CSI reporting prioritization rule w.r.t UL gap does not apply to aperiodic CSI reports.
  + Option 2: No need to prioritize CSI reporting during RRM procedure and positioning measurement report (Nokia, Apple, Qualcomm)

**Discussions:**

Ericsson: this is compromised proposal. If we do not define, the scell selection probability is low.

Qualcomm: We have concern on it. Our main concern is that we do not have enough time to perform sensing. Ericsson added some margin to address our concern. RSTD we can see the motivation. But there is difference between RSTD and SCell activation. RSTD is related to application layer. We are not comfortable about the RSTD.

Nokia: Ericsson compromise is not exact the same as Option 1. We think it is a starting point.

Apple: we share the same concern on RSTD as Qualcomm. Network can do scheduling to avoid the collision between UL gap and CSI.

Ericsson: to Nokia, our intention is to prioritize the valid CSI report. To Qualcomm, we can put it in []. To Apple, there is restriction on the network. Network scheduling is already complex. Without prioritization, there will be a lot of impact on the throughout.

**Discussion points:**

* During SCell activation procedure, when the valid CSI report overlaps with UL gap then the UE shall transmit the valid CSI report and drop the UL gap. The valid CSI report is valid L1-RSRP report or valid CQI report with non-zero CQI index.
* When the RSTD measurement report overlaps with UL gap then the UE shall transmit RSTD measurement report and drop the UL gap.

##### 9.4.3.1 UE Tx power management

**R4-2207661 On RF requirements for UL Gap**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2207706 draft CR on UL Gap RF requirements**

*Type: draftCR For: Approval  
 38.101-2 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2207814 UL gaps for Tx power management RF aspect**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2208608 Discussion on UL gap for Tx power management**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208751 UE Tx power management test case for MPE compliance**

*Type: other For: Approval  
 Source: Ericsson, Sony*

**Abstract:**

In this contribution we make proposals on the Tx power manangement for MPE and P-MPR in particular

**Decision: Noted.**

**R4-2208875 Draft CR for UL gap for Tx power management RF aspect**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia Denmark*

**Decision: Noted.**

**R4-2208876 Requirements and test cases of UE FR2 UL Gap for UE Tx power enhancement**

*Type: discussion For: (not specified)  
 38.101-2 v CR- rev Cat: (Rel-17)  
  
 Source: Nokia Denmark*

**Decision: Noted.**

**R4-2209425 R17 FR2 UL gap for power management**

*Type: discussion For: Approval  
 Source: OPPO*

**Decision: Noted.**

##### 9.4.3.2 Coherent UL-MIMO

**R4-2207815 UL gaps for coherent UL MIMO**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2209145 Draft CR to 38.101-2 on requirements for coherent UL MIMO**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Huawei,HiSilicon*

**Decision: Postponed.**

**R4-2209146 Discussion on UL coherent MIMO**

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

**Decision: Noted.**

**R4-2209153 FR2 UL coherent MIMO**

*Type: discussion For: Approval  
 Source: Anritsu Limited*

**Decision: Noted.**

**R4-2209154 Draft CR to add ‘Annex G Difference of relative phase and power errors’ for FR2 UL coherent MIMO**

*Type: draftCR For: Endorsement  
 38.101-2 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Anritsu Limited*

**Decision: Revised to R4-2211140 (from R4-2209154).**

**R4-2211140 Draft CR to add ‘Annex G Difference of relative phase and power errors’ for FR2 UL coherent MIMO**

*Type: draftCR For: Endorsement  
 38.101-2 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Anritsu Limited*

**Decision: Endorsed.**

**R4-2209155 Draft CR to add ‘Annex G Difference of relative phase and power errors’ for FR2 UL coherent MIMO**

*Type: draftCR For: Endorsement  
 38.101-2 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Anritsu Limited*

**Decision: Endorsed.**

**R4-2209156 Draft CR to add ‘Annex G Difference of relative phase and power errors’ for FR2 UL coherent MIMO**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Anritsu Limited*

**Decision: Endorsed.**

#### 9.4.4 DC location for intra-band UL CA for both FR2 and FR1

**[103-e][130] NR\_RF\_FR2\_enh2\_Part\_3, AI 9.4.4, 9.4.5 – Sanjun Feng**

**R4-2210265 Email discussion summary for [103-e][130] NR\_RF\_FR2\_enh2\_Part\_3**

*Type: other For: Information  
 Source: Moderator (vivo)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210462 (from R4-2210265).**

**R4-2210462 Email discussion summary for [103-e][130] NR\_RF\_FR2\_enh2\_Part\_3**

*Type: other For: Information  
 Source: Moderator (vivo)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2207660](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207660.zip) |  | Offset and DL CA handling for DC location | Qualcomm Incorporated | Noted |  |
| [R4-2207679](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207679.zip) |  | Further views on DC location for intra-band UL CA | Apple | Noted |  |
| [R4-2208385](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208385.zip) |  | Handling of multiple DC locations for intra-band CA | Nokia, Nokia Shanghai Bell | Noted |  |
| [R4-2208387](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208387.zip) |  | [Draft] Reply on LS Reply LS on DC location for >2CC | Nokia, Nokia Shanghai Bell | Noted |  |
| [R4-2208609](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208609.zip) |  | Discussion on remaining issue on DC location | vivo | Noted |  |
| [R4-2208610](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208610.zip) | R4-2210782 | LS on DC location for intra-band CA | vivo | Revised | To be used for 2nd round discussion |
| [R4-2209166](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209166.zip) |  | Further study on DC location reporting | Huawei, HiSilicon | Noted |  |
| [R4-2209424](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209424.zip) |  | R17 FR2 DC reporting | OPPO | Noted |  |
| [R4-2207680](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207680.zip) |  | Further views on new FR2 CA BW classes | Apple | Noted |  |
| [R4-2208314](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208314.zip) |  | Discussion on FR2 mixed-CC CA BW class | MediaTek Beijing Inc. | Noted |  |
| [R4-2208486](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208486.zip) |  | Discussion on CA BW class of mixed 100MHz and 200MHz CCs | Samsung | Noted |  |
| [R4-2208752](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208752.zip) |  | Draft LS to RAN2 on FR2 bandwidth classes covering up to 2400 MHz aggregated bandwidth with mixed carrier bandwidths | Ericsson, Verizon | Noted |  |
| [R4-2208753](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208753.zip) | R4-2210783 | FR2 CA BW classes up to 2400 MHz aggregated BW with mixed channel bandwidths | Ericsson, Verizon | Revised | Title may also need revision (“up to 2400 MHz” may be removed).  To be used for 2nd round discussion |
| [R4-2208864](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208864.zip) |  | Discussion on FR2 new CA BW classes | Xiaomi | Noted |  |
| [R4-2208865](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208865.zip) | R4-2210784 | LS to introduce new FR2 CA BW Classes | Xiaomi | Revised | To be used for 2nd round discussion |
| [R4-2208866](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208866.zip) |  | Draft CR for TS 38.101-2 to introduction of FR2 new CA BW classes | Xiaomi | Noted |  |
| [R4-2209617](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209617.zip) |  | Discussion on FR2 CA BW class with aggregated BW up to 1600MHz | ZTE Corporation | Noted |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210782 |  | LS on DC location for intra-band CA | vivo | Approval |  |
| R4-2210783 |  | FR2 CA BW classes up to 2400 MHz aggregated BW with mixed channel bandwidths | Ericsson, Verizon | Endorsed |  |
| R4-2210784 |  | LS to introduce new FR2 CA BW Classes | Xiaomi | Noted |  |

Agreement:

* Keep R~U and inform RAN2 that R~U is under consideration
  + Further discuss whether to remove R~U and if not how to specify the fallback rule
* FFS to introduce the new IE to limit the maximum aggregated bandwidth
* Put the 1600MHz limitation in the corresponding baseket WID

**GTW on May 12**

**Topic 1: DC location**

**Sub-topic 1-1** **Offset range**

**Issue 1-1-4: (refined) How much signalling bits or offset range are needed.**

* Proposals
  + Option 1: 15bits for FR1 & FR2;
    - About +/-250MHz for 15KHz SCS and +/-1000MHz for 60KHz SCS
  + Option 2: Provide specific offset range to RAN2, and leave the detailed bits to RAN2 decision
    - E.g., 600 MHz for FR1 and 2400MHz for FR2
  + Option 3: Reuse 12bits for FR1 & FR2;
  + Option 4: Others

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| OFFSET bits | SCS (KHz) | Largest offset (MHz) | Can covered largest FS (MHz) | Largest FS in FR1 spec | Largest FS in FR2-1 spec | [Largest CA bandwidth for FR2-2] |
| 15 bits | 15 | 491 | 983 + 2xCBW | FR1= 600MHz | NA | NA |
| 60 | 1966 | 3932 + 2xCBW | FR2-1= 2400MHz |
| 120 | 3932 | 7894 + 2xCBW | NA | FR2-2 = [2000MHz] |

Note: the largest CA bandwidth for FR2-2 come from WF R4-2202365

* Recommended WF
  + Option 1

Discussions:

Oppo: Option 1 can be used for signaling, which can cover legacy frequency range based on SCS for FR1 and FR2.

Nokia: Basically our preference is Option 3 to minimize the signaling overhead but we can accept option 1 in case that RAN4 asks RAN2 to minimize the signaling not to report all the DC location. In the field network cannot use the DC locations located in the other operator frequency range.

Qulacomm: Where is the bits contained in the RAN2 spec? We are fine with both Option 1 and 2. Option 1 provides the big range. We prefer Option 2.

Apple: Since Rel-17 DC scheme is based on first determining the default location. The final DC location is closed to default DC location bsed on the certain criterion. Our preference is Option 3. We can accept Option 1.

ZTE: It looks like that we are discussing how to define the signaling, which is the RAN2 job. We can only need to provide the frequency range and granularity, which are enough.

Vivo: We can fully understand some companies provide range only and leave bits to RAN2 decision. It is possible that we can have rough range. Even we have some different understanding of many details about the final results how many bits that we should use. Option 2 is with rough range which is agreeable to us.

OPPO: Using this table in our calculation is easier for company to understand how many bits are needed. 15 bits are enough.

Huawei: we share the similar comment as ZTE. The signaling design is RAN2 job. The specific bit number can be removed from the first bullet.

Nokia: we would like to go through all the issues.

OPPO: the granularity is in unit of 15KHz or 60KHz.

Qualcomm: the number of bits would cause confusion in RAN2. Number of bits is not relevant.

Apple: do we need put +/-250MHz?

OPPO: we suggest to use the largest number in RAN4.

**Tentative Agreement:**

* For Offset range:
  + +/-300MHz for FR1, and +/-1200MHz for FR2

**Sub-topic 1-2 Single CC reporting**

**Issue 1-2-1: What is the applicability of single CC reporting in Rel-17 DC reporting scheme?**

* Proposals
  + Option 1: Applicable for non-CA case in UL (i.e. UL SCCs not exist or removed by network, only DL CA is configured).
  + Option 2: Applicable in case UL CA are configured, but only one CC is activated. Not applicable for non-CA case in UL, as described in Option 1.
  + Option 3: Applicable for both cases:
    - non-CA case in UL (i.e. UL SCCs not exist or removed by network, only DL CA is configured)
    - UL CA are configured, but only one CC is activated.
  + Option 4: Others
* Recommended WF
  + Option 3

Discussion:

Nokia: the situation is not changed according to UE configuration.

**Agreement:** agree on Option 3.

**Issue 1-2-2: Will Rel-15 single CC reporting be still applicable for Rel-17 multiple DC location reporting?**

* Proposals
  + Option 1: Only Rel-17 reporting scheme can be used throughout different UL CC groups.
  + Option 2: Rel-15 reporting can also be used in case the UL CC group consists of only one CC.
  + Option 3: Others
* Recommended WF
  + Option 1

Discussions:

Nokia: We would like to leave RAN2 to discuss Option 2. There is no permutation of CCs. UE just reports DC within CCs.

OPPO: OK with Option 1. To clarify, what we are discussing is for single band intra-band uplink CA. In the future, there will be 3 bands for one band there will be intra-band CA. here we are just discussing the single band.

Huawei: we believe only intra-band is under discussion. We need to make it clear that the agreement is for intra-band.

Vivo: the preivous agreeme applies for single band. The reporting scheme varies across bands and for one band the scheme is the same.

Nokia: we did not intent to have multiple bands.

Nokia: in Rel-16 the reporting is per band combination.

Qualcomm: for example, FR1 1 band + FR2 many bands and CCs, then UE uses Rel-16 scheme for FR1 band and use the Rel-17 schemes on FR2.

OPPO: We agree with Qualocmm on the situation. We are OK with agreement. If FR1+FR2 band combination, there will be a bit complicated.

**Agreement:**

* Only Rel-17 reporting scheme can be used throughout different UL CC groups on the same band

**Sub-topic 1-3 Others**

**Issue 1-3-1: Whether LO can locate in DL-only spectrum?**

* Proposals
  + Option 1: Yes.
  + Option 2: No
  + Option 3: Others
* Recommended WF
  + TX LO cannot locate in the DL only spectrum
    - The DL only spectrum here means the spectrum described in TS 38.101-2 clause 5.3A.4 and defined by Fsd according to Table 5.3A.4-3.

Discussions:

OPPO: we are OK with the recommendation. The DL only spectrum is only RAN4 terms. We care more about DL only CC.

Nokia: We do not see the necessity. If DC is not located in UL spectrum, UE does not need to report.

Qualcomm: DL only spectrum is not suitable for DC location. DL only spectrum is specified in 38.101. We can use the term to communication with RAN2.

Vivo: In our understanding, this issue intends to calrify the calculation of DC. The DL only spectrum and DL CC should not be involved in calculation.

Agreement: TX LO cannot locate in the DL only spectrum

* The DL only spectrum here means the spectrum described in TS 38.101-2 clause 5.3A.4 and defined by Fsd according to Table 5.3A.4-3.

**Issue 1-3-2: About single CC in one CC group**

* Proposals
  + Proposal 1: Considering current spec restriction (1LO for FR2, maximum 2CCs UL for FR1), limit the CC groups so that each group contains only one UL CC; (Qualcomm: [R4-2207660](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207660.zip))
  + Proposal 2: Clarify CC groups do not always consist of multiple CCs, but it may consist of single CC(Nokia: R4-2208385).
* Recommended WF
  + Proposal 2 is acceptable, but more discussion is needed for proposal 1.

**Discussions:**

OPPO: OK with proposal 2. For proposal 1, it is OK for Rel-17 since there are only at most two CCs. But since Rel-17 reporting applies for more CCs, the restriction is not reasonable any more.

Vivo: for proposal 1, it clarifies the configuration. Does it intent to provide information to RAN2 to help signaling design? If so, we are OK. We do not want to have restriction.

Qualcomm: the proposal 1 comes from the discussion with RAN2 colleague. There is only one CC within a group. It just helps RAN2.

**Agreement:**

* Clarify CC groups do not always consist of multiple CCs, but it may consist of single CC
* To help RAN2 design in Rel-17, RAN4 provides the following information
  + Considering current spec restriction (1LO for FR2, maximum 2CCs UL for FR1), limit the CC groups so that each group contains only one UL CC

**Issue 1-3-3: About DL&UL fallback behaviour and CC groups. (Qualcomm:** [**R4-2207660**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207660.zip)**)**

*The question what happens in fallback case here. If one DL CC is deactivated or de-configured, then there is no change in CC grouping since the reason for the second LO was two UL CCs. If the second UL CC is deactivated/deconfigured, the second LO is not needed anymore.*

* Proposals
  + Proposal 1: The fallback case should follow the same CC grouping as the higher level CA configuration where the DC location was signalled for DL CCs.
  + Proposal 2: For the UL CC fallback case, the second LO is not assumed to be present anymore.
* Recommended WF
  + Need more discussion

**Discussions:**

Qualcomm: A+(B+C), what if C is deacitvated, then (A)+(B) or the group needs to be re-communicated? In this case, there will be only one LO.

Apple: the fall back is equal to deacitvation of CC? They may be different. The activation means multiple CC is de-/activated but the configuration is not changed. In the case of activation/de-activtion, we think he DC location has been covered by Rel-17 default scheme. The confusion part would be two DC lcoations are within the different groups. If one group is deactivated, there is no need to have DC for that group. There should not be too much confusion for this case.

OPPO: for proposal 1, it may not be always true. Each CC group is associated with DC location. The default DC lcoation framework applies to each CC group. UE uses the default DC to repot offset. In the previous LS to RAN2, default DC is mandated to configure.

Huawei: are these two proposals relevant to reporting? Deactivation and deconfiguration are different. We should better understand Rel-17 scheme can work and no issue.

Qualcomm: the fall back is the only case that something is configured. RAN2 tries to save something.

**Issue 1-3-4: Do we need to inform RAN2 UEs may not have to report all the permutations with DC positions. (Nokia: R4-2208385).**

* Proposals
  + Option 1: Yes
  + Option 2: No
* Recommended WF
  + Need more discussion

**Discussions:**

Nokia: network must be allowed to inform UE that some DC falling in a certain frequency range will not be used. We can save some overhead that UE does not need to report such information.

OPPO: generally we are OK with the statement that UE won’t need to report all the DC location. But for which location not being reported, it is up to UE. For the situation Nokia commented that some DC locations are within other operators, we understand but it is difficult for UE to know such information.

Qualcomm: it is for signaling simplification. To Nokia, we need to see the details when and where and how to provide information to RAN2. In principle we are OK but it is difficult in reality. We need clear rules.

Apple: the original intent of DC reporting is to get help from gNB. gNB can do DC removal processing to improve the uplink signal quality. If DC location is outside uplink bandwidth of UE, it does not help interms of improving the channel Qualcomm. In this case, UE either can not report or report 3000/3001 means out-of-carrier or unknown. Whether to report DC should not be mandatory. If DC falls in the gap for non-contiguos, gNB needs do nothing.

Huawei: We prefer option2. RAN2 kicks off the signalign design. We can wait for RAN2 LS to see if they need help from RAN4.

Nokia: To Apple, Apple assumption is that UE knows where the operator spectrum in the beginning. But UE may not have such information. If DC location falls outside of frequency range of operators, UE can report 3000/3001 but UE may not know where the frequency is in the beginning. Network needs tell UE where the spectrum is. It should be taken into account in RAN2 signaling design. We do not need to force RAN2 to take it, but we should inform RAN2 that some DCs fall into other operators’ spectrum does not need to report. The final decision is up to RAN2.

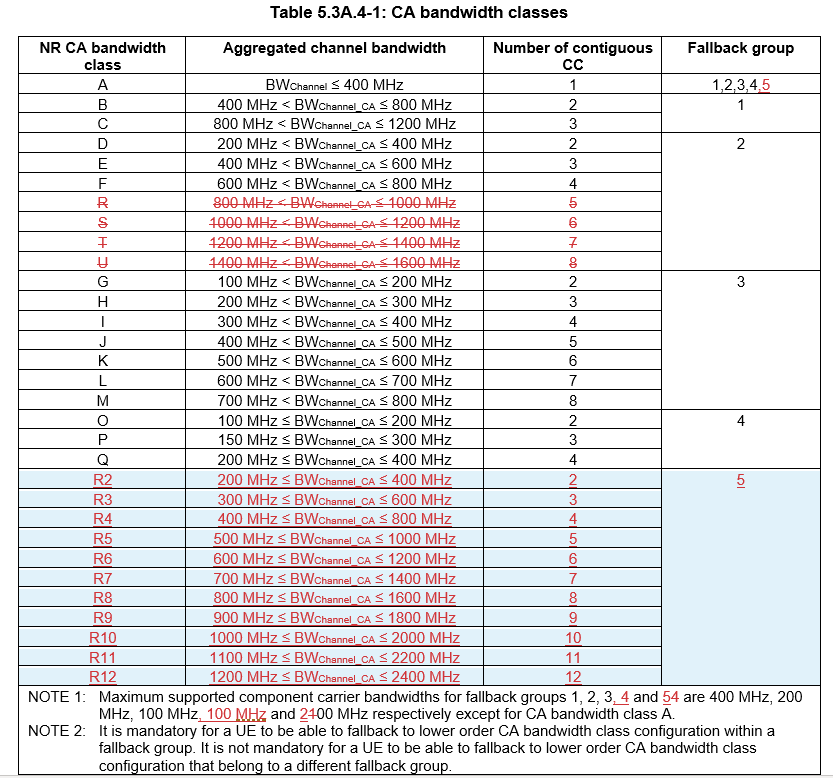
**Topic 2: New CA bandwidth class**

**Issue 2-1-1: How to select the baseline of new CA BW classes and fall back behaviour?**

* Proposals
  + (Modified) Option 2b (Apple):
  + (Modified) Option 2c: (Ericsson’s CR) non-interlaced 100 MHz and 200 MHz.
  + (Modified) Option 3 (Xiaomi’s CR): Define new FBG2 classes V, W, X and Y with associated note 3 as presented in table below.
* Recommended WF

**Agreement:**

* Take option 2c as baseline
  + For CA BW class R9, R10, R11, R12 of FBG5, the maximum aggregated BW is limited to 1600MHz in Rel-17.
    - FFS on whether and how to capture it in Rel-17 RAN4 specification, and whether to capture it in Rel-17 RAN2 specification
  + Option 2c:



* + Further refinement is needed:
    - Further discussion on proposal 4 in Issue 2-1-2.
    - Considering other issues

**Issue 2-1-2: (new issue) How to refine the option 2c?**

* Proposals
  + Proposal 1(Xiaomi, ZTE, Apple, ):
    - Retaining R/S/T/U in FBG#2.

Ericsson: we disagree with proposal 1. Considering signaling, we can use proposal 4.

Apple: the reason to keep RSTU is to limit the signaling overhead. Even if adding option 4, network does not know more than 4 200MHz. 1600Mhz is not the worst case. We see the signalign would be complicated.

Samsung: for proposal 1, we agree with Ericsson. Operator demand is to deploy hybrid 100 and 200 CCs. For proposal 4, we think the new IE won’t resolve the problem. 1600MHz max aggregated bandwidth is agreed to be the maximum one. We need proposal 2. Is capability of proposal 4 is mandatory or optional.The new IE is the RAN2 issue.

Qualcomm: RSTU is not necessary which is covered by 2c. To Samsung, the new IE should not be mandatory. But is not the corner case. It is aligned with the actual hardward capability. The current structure does not allow UE to report in that way.

Huawei: for proposal 4, we are against that. The current signaling is enough. The signaling is nothing to do with per band capability.

Verizon: Agree with Samsung and Qualcomm. We do not think RSTU is needed. We support Qualcomm proposal 3 and 4. They try to benefit for UE to search for combos. It is optional feature and useful.

Ericsson: We disagree with Apple that the signaling issue is due to 1600Mhz limitation as such. It is the issue if UE can support 1600MHz and can support more 200Mhz carriers. For the original problem, 2400MHz can be covered by 2c and issue is for fallback issue when UE supports more 200Mhz carriers. Regarding additional IE, the multiple feature set is already problematic for FR1.

Xiaomi: we support proposal 1. It does not mean all the UE needs to support the combiantions. RSTU should be kept in the FBG#2. If removing RSTU, it means FBG#2 is abandoned. The new UE supporting FBG#2 only supports FBG#5. There would be problem for legacy network.

ZTE: Support #1. RSTU are the previous agreement. It is better to keep FBG#2 for UE vendor not to use FBG#5. As the preiouvs agreement supporting 4 CC in FBG#1 should be considered. 400Mhz should also be considered in FBG#1.

Apple: To Ericsson, if we go back to option 2c. What information does UE need to report to network to inform the true capability, ie.., how many CCs to support 100Mhz and how many CCs to support 200Mhz?

Huawei: regarding proposal #4 we do not see the need to introduce the new signaling. The multiple feature set problems has been addressed by RAN2.

Samsung: the UE does not have two signals. UE is only to support 1600MHz for R12. UE does not need to support the 1600Mhz for all the fallbacks. We propose to first agree

Ericsson: to Xiaomi, regarding fall back group 2, it is too obselet. RSTU is not introduced in the RRC specification, it is not published. To Apple, we agree from signlaing perpest that only R12 is reported. UE has to either indicate the fall back capability or it can be done by introducing more feature sets. We were to indicate the envolope of capability of 1600MHz, then UE won’t need to report the multiple feature sets to represent multiple fallback modes. To Huawei, RAN2 has introduced the additional filtering mechanism. Network can indicate that UE can only need to report upto, e.g., 8 carriers. But it does not solve the problem here.

Qualcomm: to Apple, what is the information that UE needs to report? R12, UE needs include just one feature set. With the IE, it says 1600Mhz. To Samsung, if you want to bear maximum, it can solve the legacy problem and we have other simple solution. We would like to have future-proof solution. To Huawei, actually it is not only RAN2 problem. UE can support up to X bandwidth and Y CC number. Today signaling does not indicate such envelope.

* + Proposal 2 (Samsung, MTK):
    - For CA BW class R9, R10, R11, R12 of FBG5, the maximum aggregated BW is limited to 1600MHz in Rel-17.
  + Proposal 3(Qualcomm): Add a clarification in the notes that ‘*explicit indication of support of a BW class in FBG5 does not imply that all possible variants of the lower order BW class must be supported. Only those variants of the lower order BW class that obey fallback rules as described in 38.306 must be supported*’
  + Proposal 4(Qualcomm): Add an IE for the UE to explicitly indicate ‘max Agg. BW capability’ of the UE for any BW class in this FBG. This type of IE, if signaled, would also allow a flexible UE to inform the network that it can support any combination of 100M and 200M non-interlaced channels inside the indicated max. agg. BW, provided the number of CCs is not greater than those associated with the explicitly supported BW class.
  + Proposal 5(Apple):

|  |  |  |  |
| --- | --- | --- | --- |
| NR CA bandwidth class | Aggregated channel bandwidth | Number of contiguous CC | Fallback group |
| A | BWChannel ≤ 400 MHz | 1 | 1,2,3,4,5 |
| B | 400 MHz < BWChannel\_CA ≤ 800 MHz | 2 | 1 |
| C | 800 MHz < BWChannel\_CA ≤ 1200 MHz | 3 |  |
| D | 200 MHz < BWChannel\_CA ≤ 400 MHz | 2 | 2 |
| E | 400 MHz < BWChannel\_CA ≤ 600 MHz | 3 |  |
| F | 600 MHz < BWChannel\_CA ≤ 800 MHz | 4 |  |
| R | 800 MHz < BWChannel\_CA ≤ 1000 MHz | 5 |  |
| S | 1000 MHz < BWChannel\_CA ≤ 1200 MHz | 6 |  |
| T | 1200 MHz < BWChannel\_CA ≤ 1400 MHz | 7 |  |
| U | 1400 MHz < BWChannel\_CA ≤ 1600 MHz | 8 |  |
| G | 100 MHz < BWChannel\_CA ≤ 200 MHz | 2 | 3 |
| H | 200 MHz < BWChannel\_CA ≤ 300 MHz | 3 |  |
| I | 300 MHz < BWChannel\_CA ≤ 400 MHz | 4 |  |
| J | 400 MHz < BWChannel\_CA ≤ 500 MHz | 5 |  |
| K | 500 MHz < BWChannel\_CA ≤ 600 MHz | 6 |  |
| L | 600 MHz < BWChannel\_CA ≤ 700 MHz | 7 |  |
| M | 700 MHz < BWChannel\_CA ≤ 800 MHz | 8 |  |
| O | 100 MHz ≤ BWChannel\_CA ≤ 200 MHz | 2 | 4 |
| P | 150 MHz ≤ BWChannel\_CA ≤ 300 MHz | 3 |  |
| Q | 200 MHz ≤ BWChannel\_CA ≤ 400 MHz | 4 |  |
| V2 | 200 MHz ≤ BWChannel\_CA ≤ 400 MHz | 2 | 5 |
| V3 | 300 MHz ≤ BWChannel\_CA ≤ 600 MHz | 3 |
| V4 | 400 MHz ≤ BWChannel\_CA ≤ 800 MHz | 4 |
| V5 | 500 MHz ≤ BWChannel\_CA ≤ 1000 MHz | 5 |
| V6 | 600 MHz ≤ BWChannel\_CA ≤ 1200 MHz | 6 |
| V7 | 700 MHz ≤ BWChannel\_CA ≤ 1400 MHz | 7 |
| V8 | 800 MHz ≤ BWChannel\_CA ≤ 1600 MHz | 8 |
| V9 | 900 MHz ≤ BWChannel\_CA ≤ 1800 MHz | 9 |
| V10 | 1100 MHz ≤ BWChannel\_CA ≤ 2000 MHz | 10 |
| V11 | 1300 MHz ≤ BWChannel\_CA ≤ 2200 MHz | 11 |
| V12 | 1500 MHz ≤ BWChannel\_CA ≤ 2400 MHz | 12 |
| NOTE 1: Maximum supported component carrier bandwidths for fallback groups 1, 2, 3, 4 and 5 are 400 MHz, 200 MHz, 100 MHz, 100 MHz and 200 MHz respectively except for CA bandwidth class A. For CA bandwidth classes of fallback group 5, requirements apply for non-interlaced 100 MHz and 200 MHz channel bandwidths (each CA bandwidth class consisting of up to two contiguous sub-blocks each with component carriers of a single channel bandwidth).  NOTE 2: It is mandatory for a UE to be able to fallback to lower order CA bandwidth class configuration within a fallback group. It is not mandatory for a UE to be able to fallback to lower order CA bandwidth class configuration that belong to a different fallback group. | | | |

* + Proposal 6 (Nokia): Updating NOTE 2 as follows:
    - NOTE 2: It is mandatory for a UE to be able to fallback to lower order CA bandwidth class configuration within a fallback group that results in a release of at least one component carrier. It is not mandatory for a UE to be able to fallback to lower order CA bandwidth class configuration that belong to a different fallback group.
* Recommended WF
  + Need more discussion

--------------------------------------------------------------------------------------------------------------------------------------

**R4-2207660 Offset and DL CA handling for DC location**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2207679 Further views on DC location for intra-band UL CA**

*Type: other For: Approval  
 Source: Apple*

**Decision: Noted.**

**R4-2208385 Handling of multiple DC locations for intra-band CA**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208387 [Draft] Reply on LS Reply LS on DC location for >2CC**

*Type: LS out For: Approval  
 to RAN2  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208609 Discussion on remaining issue on DC location**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208610 LS on DC location for intra-band CA**

*Type: LS out For: Approval  
 to RAN2  
 Source: vivo*

**Decision: Revised to R4-2210782 (from R4-2208610).**

**R4-2210782 LS on DC location for intra-band CA**

*Type: LS out For: Approval  
 to RAN2  
 Source: vivo*

**Decision: Approved.**

**R4-2209166 Further study on DC location reporting**

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

**Decision: Noted.**

**R4-2209424 R17 FR2 DC reporting**

*Type: discussion For: Approval  
 Source: OPPO*

**Decision: Noted.**

#### 9.4.5 CA BW classes

##### 9.4.5.1 New FR2 CA BW Classes to enable CA operation for mix of 100 and 200 MHz CCs

**R4-2207680 Further views on new FR2 CA BW classes**

*Type: other For: Discussion  
 38.101-2 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2208314 Discussion on FR2 mixed-CC CA BW class**

*Type: discussion For: Approval  
 Source: MediaTek Beijing Inc.*

**Decision: Noted.**

**R4-2208486 Discussion on CA BW class of mixed 100MHz and 200MHz CCs**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2208752 Draft LS to RAN2 on FR2 bandwidth classes covering up to 2400 MHz aggregated bandwidth with mixed carrier bandwidths**

*Type: LS out For: Approval  
 to RAN2  
 Source: Ericsson, Verizon*

**Abstract:**

In this contribution we propose to adopt CA BW classes up to 2400 MHz and provide a draft LS to RAN2 to introduce these in 38.331

**Decision: Noted.**

**R4-2208753 FR2 CA BW classes up to 2400 MHz aggregated BW with mixed channel bandwidths**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Ericsson, Verizon*

**Abstract:**

Draft CR to introduce FR2 CA BW classes up to 2400 MHz aggregated BW with mixed channel bandwidths.

**Decision: Revised to R4-2210783 (from R4-2208753).**

**R4-2210783 FR2 CA BW classes up to 2400 MHz aggregated BW with mixed channel bandwidths**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Ericsson, Verizon*

**Abstract:**

Draft CR to introduce FR2 CA BW classes up to 2400 MHz aggregated BW with mixed channel bandwidths.

Agreement:

* Keep R~U and inform RAN2 that R~U is under consideration
  + Further discuss whether to remove R~U and if not how to specify the fallback rule
* FFS to introduce the new IE to limit the maximum aggregated bandwidth
* Put the 1600MHz limitation in the corresponding baseket WID

**Decision: Endorsed.**

**R4-2208864 Discussion on FR2 new CA BW classes**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2208865 LS to introduce new FR2 CA BW Classes**

*Type: LS out For: Approval  
 to RAN2  
 Source: Xiaomi*

**Decision: Revised to R4-2210784 (from R4-2208865).**

**R4-2210784 LS to introduce new FR2 CA BW Classes**

*Type: LS out For: Approval  
 to RAN2  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2208866 Draft CR for TS 38.101-2 to introduction of FR2 new CA BW classes**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2209617 Discussion on FR2 CA BW class with aggregated BW up to 1600MHz**

*Type: discussion For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

#### 9.4.6 RRM core requirements

##### 9.4.6.1 General

##### 9.4.6.2 Inter-band UL CA for IBM

##### 9.4.6.3 UL gaps for self-calibration and monitoring

**R4-2207816 UL gaps for Tx power management RRM aspect**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2207817 Draft CR for UL gap for Tx power management RRM aspect**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2208590 Discussion on remaining aspects for UL Gaps (RRM)**

*Type: discussion For: Agreement  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208591 CR for UL gaps for Tx power management**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208787 LS on priority for PHR including MPE indication**

*Type: LS out For: Approval  
 to RAN2  
 Source: Nokia Corporation*

**Decision: Noted.**

**R4-2210126 Discussion on UL gaps prioritization over critical UL signals**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we discuss prioritization of CSI reprot and positioning report w.r.t UL gaps

**Decision: Noted.**

**R4-2210127 Draft CR on UL gaps for BPS**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to update the prioritizatiuon rules for UL gaps

**Decision: Revised to R4-2210781 (from R4-2210127).**

**R4-2210781 Draft CR on UL gaps for BPS**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple, Ericsson, Nokia*

**Abstract:**

Draft CR to update the prioritizatiuon rules for UL gaps

**Decision: Endorsed.**

#### 9.4.7 RRM performance requirements

##### 9.4.7.1 Inter-band UL CA for IBM

##### 9.4.7.2 UL gaps for self-calibration and monitoring

**R4-2208595 Discussion on test for UL gaps for Tx power management**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208778 Discussion on performance requirements of UL gap for Tx power management**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2210129 Scope of the RRM test cases for UL gaps for TX power management**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discssion on the scope of test cases needed for this feature

**Decision: Noted.**

### 9.5 NR repeater

#### 9.5.1 General requirement maintenance

#### 9.5.2 Conductive RF core requirement maintenance

#### 9.5.3 Radiated RF core requirement maintenance

#### 9.5.4 EMC core requirement maintenance and performance requirement

#### 9.5.5 RF Conformance testing

##### 9.5.5.1 General

###### 9.5.5.1.1 Stimulus signal /Test models

###### 9.5.5.1.2 Test configurations

###### 9.5.5.1.3 Others

##### 9.5.5.2 Conductive conformance Testing

###### 9.5.5.2.1 Transmitted power related requirements

###### 9.5.5.2.2 Emission requirements

###### 9.5.5.2.3 Others

##### 9.5.5.3 Radiated conformance Testing

###### 9.5.5.3.1 Transmitted power related requirements

###### 9.5.5.3.2 Emission requirements

###### 9.5.5.3.3 Others

### 9.6 Introduction of DL 1024QAM for NR FR1

#### 9.6.1 UE RF requirements maintenance

#### 9.6.2 BS TX RF requirements maintenance

#### 9.6.3 BS RF conformance testing

#### 9.6.4 Demodulation and CSI requirements

##### 9.6.4.1 PDSCH requirements

##### 9.6.4.2 SDR requirements

##### 9.6.4.3 CQI requirements

### 9.7 Enhancement for NR high speed train scenario in FR1

#### 9.7.1 RRM core requirement maintenance

#### 9.7.2 RRM performance requirements

#### 9.7.3 UE demodulation requirements (38.101-4)

### 9.8 NR support for high speed train scenario in FR2

#### 9.8.1 UE RF core requirement maintenance

**[103-e][108] NR\_HST\_FR2\_maintenance, AI 9.8.1 – He Wang**

**R4-2210244 Email discussion summary for [103-e][108] NR\_HST\_FR2\_maintenance**

*Type: other For: Information  
 Source: Moderator (Samsung)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**R4-2210444 Email discussion summary for [103-e][108] NR\_HST\_FR2\_maintenance**

*Type: other For: Information  
 Source: Moderator (Samsung)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Withdrawn.**

**Conclusions after 1st round**

This email thread was closed after the first round discussion.

##### 9.8.1.1 UE Tx requirements

##### 9.8.1.2 UE Rx requirements

**R4-2208504 Discussion on Spherical Coverage requirements for FR2 HST**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

#### 9.8.2 RRM core requirement maintenance

##### 9.8.2.1 General

##### 9.8.2.2 RRC Idle/Inactive and connected state mobility requirements

##### 9.8.2.3 Timing requirements

##### 9.8.2.4 Signalling characteristics requirements

##### 9.8.2.5 Measurement procedure requirements

#### 9.8.3 RRM performance requirements

#### 9.8.4 Demodulation requirements

##### 9.8.4.1 UE demodulation requirements

###### 9.8.4.1.1 PDSCH requirements under Uni-directional scenario

###### 9.8.4.1.2 PDSCH requirements under Bi-directional scenario

##### 9.8.4.2 BS demodulation requirements

###### 9.8.4.2.1 PUSCH requirements

###### 9.8.4.2.2 PUSCH with UL timing adjustment requirements

###### 9.8.4.2.3 PRACH requirements

### 9.9 Further RRM enhancement for NR and MR-DC

**[103-e][206] NR\_RRM\_enh2\_1, AI 9.9, 9.9.1, 9.9.1.1, 9.9.2.1 – Jerry Cui**

**R4-2210278 Email discussion summary for [103-e][206] NR\_RRM\_enh2\_1**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210475 (from R4-2210278).**

**R4-2210475 Email discussion summary for [103-e][206] NR\_RRM\_enh2\_1**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**Existing tdocs**

**Core part**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207766 |  | Work plan for R17 FeRRM performance part | Apple | Approved |  |
| R4-2207767 |  | CR on SRS antenna port switching in TS38.133 | Apple | Agreed |  |
| R4-2208092 |  | 38.133 CR on introduction of SRS antenna port switching (resubmission) | Nokia, Nokia Shanghai Bell | Agreed |  |
| R4-2208093 | R4-2210993 | draftCR on interruptions at SRS antenna switching | Nokia, Nokia Shanghai Bell | Revised |  |
| R4-2208316 | R4-2210994 | CR on interruption limitation due to SRS antenna switching | LG Electronics Inc. | Not pursued  10994 withdrawn | based on Issue 2-1 |
| R4-2208935 | R4-2210995 | CR on SRS antenna port switching requirements 36.133 | Huawei, Hisilicon | Revised |  |
| R4-2209133 |  | Draft CR on SRS antenna port switching requirements 38.133 | Huawei, Hisilicon | Merged | Merged to revision of R4-2208093 |

**Perf part**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207768 | R4-2210996 | On test case list for SRS antenna port switching | Apple | Revised | Capture the test case list and configurations. |
| R4-2207731 |  | SRS configuration correction | Qualcomm, Inc. | Not Pursued | Treated in other CR in thread #201 |
| R4-2208065 |  | DraftCR to TS 38.133: NR FR1 interruptions at NR SRS antenna port switching with more than 1 SRS symbol in NR-CA | Intel Corporation | Postponed | Focus on the discussion of above issues. The CR could be treated in next meeting. |
| R4-2208094 |  | draftCR on TC1 SRS antenna switching with 1 SRS symbol in sync EN-DC | Nokia, Nokia Shanghai Bell | Postponed | Focus on the discussion of above issues. The CR could be treated in next meeting. |
| [R4-2208108](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208108.zip) |  | Draft CR on NR FR1 - E-UTRAN interruptions at NR SRS antenna port switching with 1 SRS symbol in asynchronous NE-DC | Xiaomi | Postponed | Focus on the discussion of above issues. The CR could be treated in next meeting. |
| [R4-2208175](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208175.zip) |  | Test case for Interruptions at NR FR1 one SRS symbol with antenna port switching in asynchronous EN-DC | CATT | Postponed | Focus on the discussion of above issues. The CR could be treated in next meeting. |
| [R4-2208350](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208350.zip) |  | draft CR on NR FR1-E-UTRAN interruptions at NR SRS antenna port switching with 1 SRS symbol in synchronous NE-DC (TC6) | OPPO | Postponed | Focus on the discussion of above issues. The CR could be treated in next meeting. |
| [R4-2208461](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208461.zip) |  | Draft CR on TC for interruptions at SRS antenna port switching with more than 1 SRS symbol in async NE-DC | MediaTek Inc. | Postponed | Focus on the discussion of above issues. The CR could be treated in next meeting. |
| [R4-2208941](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208941.zip) |  | Draft CR on TC for NR SRS antenna port switching with more than 1 SRS symbol in asynchronous EN-DC | Huawei, Hisilicon | Postponed | Focus on the discussion of above issues. The CR could be treated in next meeting. |
| [R4-2209493](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209493.zip) |  | draft CR on test cases for NR FR1 interruptions at NR SRS antenna port switching with 1 SRS symbol in NR-CA | vivo | Postponed | Focus on the discussion of above issues. The CR could be treated in next meeting. |

**Conclusions after 2nd round**

**Existing tdocs**

**Core part**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210993 (revision of R4-2208093) |  | draftCR on interruptions at SRS antenna switching | Nokia, Nokia Shanghai Bell | Endorsed |  |
| R4-2210995 (revision of R4-2208935) |  | CR on SRS antenna port switching requirements 36.133 | Huawei, Hisilicon | Agreed |  |

**Perf part**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210996 (revision of R4-2207768) |  | On test case list for SRS antenna port switching | Apple | Approved | Capture the test case list and configurations. |

**GTW on May 13**

**Perf part:**

**Subtopic 3-1: General scope for testing:**

**Issue 3-1-1: MR-DC or CA modes in SRS antenna port switching testing**

Issue 3-1-1: MR-DC or CA modes in SRS antenna port switching testing. —> issue 3-1-1 in section 3.4.1 of attached summary

* Option 1 (Qualcomm, vivo):
  + NR-SA (FR1+FR1 NR CA) and EN-DC (LTE Pcell + FR1 NR PSCell + FR1 NR Scell)
* Option 1a (Qualcomm):
  + Testability issue should be resolved first before introducing test case for 1 symbol SRS antenna switching test
* Option 2 (CMCC):
  + EN-DC, SA, NE-DC, NR-DC
* Recommended WF
  + TBA.

**Subtopic 3-1: General scope for testing:**

|  |  |
| --- | --- |
|  | **Status summary** |
| **Issue 3-1-1: MR-DC or CA modes in SRS antenna port switching testing** | *Tentative Agreements:*   * Based on the majority companies’ view, in SRS antenna port switching testing, only following MR-DC or CA modes would be considered:   + NR-SA (FR1+FR1 NR CA) and EN-DC (LTE Pcell + FR1 NR PSCell + FR1 NR Scell)   *Candidate options:*   * Option 1 (Qualcomm, vivo, Apple, Ericsson/OPPO(also fine with splitting TC between EN-DC and NE-DC), Intel, Xiaomi, MTK, CATT, CMCC):   + NR-SA (FR1+FR1 NR CA) and EN-DC (LTE Pcell + FR1 NR PSCell + FR1 NR Scell)   + Option 1a (Qualcomm, Apple, Intel, Xiaomi, MTK, CATT):     - Testability issue should be resolved first before introducing test case for 1 symbol SRS antenna switching test   *Recommendations for 2nd round:*   * Check the tentative agreement in 2nd round in the email thread for test case list discussion * Continue the discussion on option 1a in 2nd round in the email thread for test case list discussion. But since option 1a is also relevant to other issue e.g., issue 3-2-5, if any solution could be agreed in issue 3-2-5, then no need to further discuss this option 1a. |

Discussions:

CMCC: Our concern is that according companies’ comment the functionality of EN-DC and NE-DC is the same. We would liek to have the additional agreement: If UE passes the performance requirements of EN-DC, the performance for NE-DC can be guaranteed.

Ericsson: Test cases can be splitted between EN-DC and NE-DC.

Nokia: We are fine to leave out of NE-DC. About the tentative agreement, we have concern on NR-SA case. Why should we only consider FR1+FR1. We can try some test for FR1+FR2 in SA.

Qualcomm: Comparing EN-DC and NE-DC, we also think EN-DC is more relevant. Support CMCC solution. For FR1+FR2, the test set up is issue. And whether to see it in practice is another issue. They are not ususal case. It is not necessay to add test. Ue has no interruption on FR2.

Mediatek: From test perspectives, there is no much difference between EN-DC and NE-DC. We have no strong view to introduce the test cases for NE-DC. We want to reduce the test cases.

OPPO: We are also fine to split the test cases between En-DC and NE-DC. FR1+FR2 is rare case.

Vivo: we share the simialr view as Qualcomm. We do not need test any NE-DC for this feature.

Intel: we also share the same view. We need to limit the test case. FR1+FR2 there are test issue. We have concern whether the test case can work.

Moderator: For EN-DC and NE-DC, most companies think that we only need to test one mode. Splitting test cases is also fine. How to split, please indicate. For FR1-FR2 case, the only test case we captured is if FR1 is not impacted. The SRS will cause interruption for FR1. The FR1 connection should be kept. The FR1-FR2 test should be precluded.

Qualcomm: If the field, there are more UE supporting EN-DC than UE supporting NE-DC.

Ericsson: We are not increasing the test cases. The performance is the same. The splitting is better way.

CMCC: Share the similar view that we should not split the test cases between EN-DC and NE-DC. Maybe we can select a minimum number of test as full test.

Agreements:

* In SRS antenna port switching testing, only following MR-DC or CA modes would be considered:
  + NR-SA (FR1+FR1 NR CA) and EN-DC (LTE Pcell + FR1 NR PSCell + FR1 NR Scell)
    - If UE passes the performance requirements of EN-DC, then the performance for NE-DC is expected to be guaranteed.

**Issue 3-1-2: scenarios for SRS antenna port switching testing**

Issue 3-1-2: scenarios for SRS antenna port switching testing + Issue 3-2-5: SRS configuration for scenario 1 sync case (symbol-level interruption) (these two issues are relevant) —> issue 3-1-2 and issue 3-2-5 in section 3.4.1 of attached summary

* Option 1 (Qualcomm):
  + Only test interruption requirement (slot-level) for scenario 2
  + Testability issue should be resolved first before introducing test case for 1 symbol SRS antenna switching test
* Option 2 (CMCC): Test followings
  + Interruption requirement (symbol-level) for scenario 1 sync case
  + Interruption requirement (slot-level) for scenario 1 async case
  + Interruption requirement (slot-level) for scenario 2
* Recommended WF
  + TBA.

|  |  |
| --- | --- |
| **Issue 3-1-2: scenarios for SRS antenna port switching testing** | *Tentative Agreements:*   * + No tentative agreement yet   *Candidate options:*   * Option 1 (Qualcomm, Apple, LGE, MTK):   + Only test interruption requirement (slot-level) for scenario 2   + Testability issue should be resolved first before introducing test case for 1 symbol SRS antenna switching test * Option 2 (CMCC, Huawei, Ericsson, vivo, Nokia, Intel, Xiaomi, CATT(testability of scenario 1 is FFS)): Test followings   + Interruption requirement (symbol-level) for scenario 1 sync case   + Interruption requirement (slot-level) for scenario 1 async case   + Interruption requirement (slot-level) for scenario 2 * Option 3 (QC, OPPO):   + Interruption requirement (symbol-level) for scenario 1 sync case   + Interruption requirement (slot-level) for scenario 2   *Recommendations for 2nd round:*   * Continue the discussion in 2nd round in the email thread for test case list discussion, and discuss this issue together with issue 3-2-5 * Encourage companies to check whether option 3 could be a compromise if slot-level ACK/NACK loss is tested for scenario 1 sync case based on issue 3-2-5 discussion. |

Discussions:

Agreement: Agree Option 3

**Issue 3-2-2: General configuration – SRS resource**

Issue 3-2-2: General configuration – SRS resource—> issue 3-2-2 in section 3.4.1 of attached summary

* Proposal 1 (CATT):
  + For scenario 1, new SRS configurations, SRS.4 TDD for 15kHz SCS and SRS.5 TDD for 30kHz SCS, will be defined. For each configuration, two SRS resources of one symbol are configured at 11th and 13th symbol in the same slot.
  + For all scenarios, periodic SRS transmission with antenna port switching is configured in the test for reducing test time.
* Proposal 2 (Huawei): for all scenarios:
  + SRS resource configuration to be defined in generic approach for different UE capability (i.e. add a note to clarify that nrofSRS-Ports depends on indicated UE capability for SRS antenna port switching)
  + Periodic SRS resource set is used in the test cases to verify that the length of each interruption is less than the interruption requirements, and the interval between SRS sources should be larger than 3/6 slots for 15 KHz/30KHz to avoid overlapping of interruption caused by two SRS resource.
* Proposal 3 (Qualcomm): for scenario 2
  + Use 1T2R and the following configurations.

Sounding Reference Symbol Configuration for SCS=15kHz

|  |  |  |  |
| --- | --- | --- | --- |
|  | SRS.x1 TDD | |  |
| Field | Value | | Comment |
| srs-ResourceId | 0 | 1 |  |
| c-SRS | 12 | |  |
| b-SRS | 0 | |  |
| b-hop | 0 | | Frequency hopping is disabled |
| groupOrSequenceHopping | neither | | No group or sequence hopping |
| freqDomainPosition | 0 | | Frequency domain position of SRS |
| freqDomainShift | 0 | |  |
| pathlossReferenceRS  ssb-Index | 0 | | SSB #0 is used for SRS path loss estimation |
| Usage | antennaSwitching | |  |
| startPosition | 5 | 3 | resourceMapping setting |
| nrofSymbols | 1 | |  |
| repetitionFactor | n1 | | without repetition. |
| transmissionComb | n2 | |  |
| combOffset | 0 | | transmissionComb setting |
| cyclicShift | 0 | |  |
| nrofSRS-Ports | port1 | | Number of antenna ports used for SRS transmission |
| resourceType | Periodic | |  |
| periodicityAndOffset-p | sl40, 2 | | SRS transmission periodicity |

Sounding Reference Symbol Configuration for SCS=30kHz

|  |  |  |  |
| --- | --- | --- | --- |
|  | SRS.x2 TDD | |  |
| Field | Value | | Comment |
| srs-ResourceId | 0 | 1 |  |
| c-SRS | 24 | |  |
| b-SRS | 0 | |  |
| b-hop | 0 | | Frequency hopping is disabled |
| groupOrSequenceHopping | neither | | No group or sequence hopping |
| freqDomainPosition | 0 | | Frequency domain position of SRS |
| freqDomainShift | 0 | |  |
| pathlossReferenceRS  ssb-Index | 0 | | SSB #0 is used for SRS path loss estimation |
| Usage | antennaSwitching | |  |
| startPosition | 5 | 3 | resourceMapping setting |
| nrofSymbols | 1 | |  |
| repetitionFactor | n1 | | without repetition. |
| transmissionComb | n2 | |  |
| combOffset-n2 | 0 | | transmissionComb setting |
| cyclicShift-n2 | 0 | |  |
| nrofSRS-Ports | port1 | | Number of antenna ports used for SRS transmission |
| resourceType | Periodic | |  |
| periodicityAndOffset-p | sl80, 4 | | SRS transmission periodicity is 40ms |

* Recommended WF
  + Please provide your comments for each proposal.
  + For each scenario(scenario 1, scenario 2), please provide your view on the SRS resource configuration.

|  |  |
| --- | --- |
| **Issue 3-2-2: General configuration – SRS resource** | *Tentative Agreements:*   * No tentative agreements   *Candidate options:*   * Proposal 1 (CATT):   + For scenario 1, new SRS configurations, SRS.4 TDD for 15kHz SCS and SRS.5 TDD for 30kHz SCS, will be defined. For each configuration, two SRS resources of one symbol are configured at 11th and 13th symbol in the same slot.   + For all scenarios, periodic SRS transmission with antenna port switching is configured in the test for reducing test time. (CATT, Apple, Nokia, MTK, CATT) * Proposal 2 (Huawei): for all scenarios:   + SRS resource configuration to be defined in generic approach for different UE capability (i.e. add a note to clarify that nrofSRS-Ports depends on indicated UE capability for SRS antenna port switching) (HW, Apple, vivo, Xiaomi)   + Periodic SRS resource set is used in the test cases to verify that the length of each interruption is less than the interruption requirements, and the interval between SRS sources should be larger than 3/6 slots for 15 KHz/30KHz to avoid overlapping of interruption caused by two SRS resource.(HW, Apple/vivo/Xiaomi(for scenario 1), Nokia, CATT) * Proposal 3 (Qualcomm, Apple, Nokia, Xiaomi): for scenario 2   + Use 1T2R and the following configurations.   *Recommendations for 2nd round:*   * Some comment issues from 1st round discussion:   + Issue 3-2-2-1: can we agree the 1T2R configuration as a baseline, and add 2T4R and 1T4R cases later?   + Issue 3-2-2-2: can we agree the 1T2R resource configuration proposed by QC in 1st round?   + Issue 3-2-2-3 (this issue is somewhat related with issue 3-2-5): for scenario 1(1 SRS symbol in a slot):     - Can we agree on following proposal:       * Periodic SRS resource set is used in the test cases to verify that the length of each interruption is less than the interruption requirements, and the interval between SRS sources should be larger than 3/6 slots for 15 KHz/30KHz to avoid overlapping of interruption caused by two SRS resource       * configure one resource with one symbol in a slot   + Issue 3-2-2-4: For scenario 2(more than 1 SRS symbol for antenna port switching in a slot):     - configure one resource with multiple symbols in a slot, or, configure two resources in a slot and each resource has one symbol? * Continue the discussion on above identified common issues in 2nd round in the email thread for test case list discussion. |

Discussion:

Qualcomm: the first and second issues, we agree they are common issue. Focus on the first two issues 3-2-2-1/3-2-2-2.

Nokia: What does “late” mean?

Apple: during the GTW.

Ericsson: we can focus on those issues.

For issue 3-2-2-1:

Ericsson: should we define only 1T2R in this release?

Huawei: we prefer defining requirement in a more general way. UE may indicate the capability based on Rel-15/16/17 IE. This cannot cover all the case. We do not discuss the test for each capability one by one.

Vivo: the test should be applied according to capability. For this WI, the Rel-15 feature capable UE should be verified. We have concern to use 1T2R as baseline.

Qualcomm: this is for test configuration discussion. The idea is to introduce 1T2R as basic configuration. The 1T4r, 2t4r configurations can be introduced based on 1t2r.

CATT: agree with Huawei that we should define the general test cases. For srs configuration, we should try to define the general configuration. If we identify some issue in the set up, we can try to have the solution for specific case.

Huawei: try to understand the intention of Qualcomm. For different UE capability, the difference is the resource.

Mediatek: we understand this is based on capability. But 1t2r is more basic. We prefer to introduce the 1t2r first.

Apple: agree with Qualcomm. We try to avoid to consider a lot of combinations. If some tests cannot support other configuration, we can add some specific test setup. We want to finalized 1t2r first and then work on others in the same release. We are fine to Huawei addition of some parameters.

Qualcomm: The test cases we can define a general one and apply the configuration.

Vivo: have general description.

For issue 3-2-2-2: can we agree the 1T2R resource configuration proposed by QC in 1st round?

Vivo: is this issue related to issue 3-2-2-1?

Apple: related. Anyway 1t2r will be there.

Ericsson: we could Qualcomm proposal.

Vivo: To Apple, we do not have technical issue. We can further discuss it in the CR phase.

Huawei: We tend to agree with Vivo.

Conclusion: focus on the general part of tests and come back to details of CR in the next meeting.

**Core:**

**Issue 2-1: Clarification for UE does not support simultaneous reception and transmission for inter-band CA**

Issue 2-1: Clarification for UE does not support simultaneous reception and transmission for inter-band CA —> issue 2-1 in section 2.4.1 of attached summary

* Option 1 (Nokia):
  + Add below clarification when the UE does not support simultaneous reception and transmission for inter-band TDD CA:
    - for UE, which does not support simultaneous reception and transmission for inter-band TDD CA specified in TS 38.331 [2], and is compliant to the requirements for inter-band CA with uplink in one NR band and without simultaneous Rx/Tx specified in TS 38.101-3 [20], the SRS transmission are not simultaneously scheduled with DL SSB/CSI-RS for L3 or L1 measurements transmission on other carriers.
* Option 2 (LGE):
  + Add no interruption condition in the specification according to UE behaviour for transient between uplink and downlink in TS38.211 as follow:
    - For UE not capable of full-duplex communication and not supporting simultaneous transmission and reception as defined by parameter *simultaneousRxTxInterBandENDC* and *simultaneousRxTxInterBandCA*, no interruption is applied to the downlink symbol/slot before or after configured SRS resource for antenna switching according to the UE behaviour for transition between uplink and downlink in TS38.211.
* Recommended WF
  + TBA.

|  |  |
| --- | --- |
| **Issue 2-1: Clarification for UE does not support simultaneous reception and transmission for inter-band CA** | *Tentative Agreements:*   * No tentative agreement yet. * 10 companies support to no specify either option 1 or option 2 in spec, 5 companies agree to specify option 1 but only 1 company agree to specify option 2.   *Candidate options:*   * Option 1 (Nokia, HW, LG, Intel, MTK):   + Add below clarification when the UE does not support simultaneous reception and transmission for inter-band TDD CA:     - for UE, which does not support simultaneous reception and transmission for inter-band TDD CA specified in TS 38.331 [2], and is compliant to the requirements for inter-band CA with uplink in one NR band and without simultaneous Rx/Tx specified in TS 38.101-3 [20], the SRS transmission are not simultaneously scheduled with DL SSB/CSI-RS for L3 or L1 measurements transmission on other carriers. * Option 2 (LGE):   + Add no interruption condition in the specification according to UE behaviour for transient between uplink and downlink in TS38.211 as follow:     - For UE not capable of full-duplex communication and not supporting simultaneous transmission and reception as defined by parameter *simultaneousRxTxInterBandENDC* and *simultaneousRxTxInterBandCA*, no interruption is applied to the downlink symbol/slot before or after configured SRS resource for antenna switching according to the UE behaviour for transition between uplink and downlink in TS38.211. * Option 3 (Apple, HW, QC, Ericsson(if no full duplex is considered), vivo, Intel, Xiaomi, OPPO, MTK, CATT): neither option 1 nor 2 is needed to clarify in RRM spec.   *Recommendations for 2nd round:*   * Encourage companies to check if option 3 could be a compromise. Propose to discuss it in GTW. * Continue the discussion in corresponding CR thread in 2nd round. |

Agreement: neither option 1 nor 2 is needed to clarify in RRM spec.

----------------------------------------------------------------------------------------------------------------

**[103-e][207] NR\_RRM\_enh2\_2, AI 9.9.1.2, 9.9.2.2 – Qian Yang**

**R4-2210279 Email discussion summary for [103-e][207] NR\_RRM\_enh2\_2**

*Type: other For: Information  
 Source: Moderator (vivo)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210476 (from R4-2210279).**

**R4-2210476 Email discussion summary for [103-e][207] NR\_RRM\_enh2\_2**

*Type: other For: Information  
 Source: Moderator (vivo)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210583 | WF on further RRM enhancement for NR and MR-DC – HO with PSCell | vivo | Capture agreements in the meeting.  Capture open issues, if any. |
| R4-2211170 | LS on handling of RACH occasion collision between PCell and PSCell for HO with PSCell for NR-U | Ericsson | To RAN1, CC RAN2 |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2207769](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207769.zip) |  | On remaining issues of HO with PScell | Apple | Noted |  |
| [R4-2208170](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208170.zip) |  | Discussion on issues for requirement of HO with PSCell | CATT | Noted |  |
| [R4-2210131](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210131.zip) |  | Discussion RRM requirements for handover with PSCell for NR-U | Ericsson | Noted |  |
| [R4-2207770](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207770.zip) | R4-2210997 | CR on HO with PSCell for NE-DC to NE-DC in TS38.133 R17 | Apple | Revised |  |
| [R4-2207771](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207771.zip) | R4-2210998 | CR on HO with PSCell for EN-DC to EN-DC in TS36.133 R17 | Apple | Revised |  |
| [R4-2208171](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208171.zip) | R4-2210999 | Completing requirement of HO with PSCell | CATT | Revised |  |
| [R4-2208500](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208500.zip) |  | Correction on HO with PSCell requirements in 38133 | Nokia, Nokia Shanghai Bell | Merged | Merged to CR R4-2208171 |
| [R4-2208501](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208501.zip) | R4-2211191 | Correction on HO with PSCell requirements in 36133 | Nokia, Nokia Shanghai Bell | Revised |  |
| [R4-2208530](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208530.zip) |  | CR on Handover with PSCell | CMCC | Merged | Merged to CR R4-2208171 |
| [R4-2208937](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208937.zip) |  | CR on HO with PSCell requirements | Huawei, Hisilicon | Merged | Merged to CR R4-2208171 |
| [R4-2209494](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209494.zip) | R4-2211000 | CR on R17 core requirements for HO with PSCell | vivo | Revised |  |
| [R4-2210132](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210132.zip) | R4-2211001 | CR on requirements for HO with PSCell when PSCell is on CCA in EN-DC to EN-DC scenario | Ericsson | Revised |  |
| [R4-2210133](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210133.zip) | R4-2211002 | CR on requirements for HO with PSCell when PSCell is on CCA in NR SA to EN-DC scenario | Ericsson | Revised |  |
| [R4-2208176](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208176.zip) |  | Discussion on test for HO with PSCell | CATT | Noted |  |
| R4-2208458 |  | RRM performance requirements for HO with PSCELL | Qualcomm Incorporated | Withdraw |  |
| [R4-2208502](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208502.zip) |  | discussion on HO with PSCell performance requirements | Nokia, Nokia Shanghai Bell | Noted |  |
| [R4-2208518](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208518.zip) |  | Discussion on test cases for HO with PSCell | CMCC | Noted |  |
| [R4-2208942](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208942.zip) |  | Discussion on performance requirements for HO with PSCell | Huawei, Hisilicon | Noted |  |
| [R4-2209495](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209495.zip) |  | Discussion on test cases for R17 requirements for HO with PSCell | vivo | Noted |  |
| [R4-2210114](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210114.zip) |  | RRM performance requirements for HO with PSCELL | Qualcomm Incorporated | Noted |  |
| [R4-2208106](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208106.zip) | R4-2211003 | CR on test case for Handover with PSCell from NR SA to EN-DC with sequential processing | Xiaomi | Revised |  |
| [R4-2207772](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207772.zip) | R4-2211004 | Draft CR on TC for HO with PSCell from NR-SA to EN-DC with parallel processing and known FR2 PSCell in TS38.133 R17 | Apple | Revised |  |
| [R4-2208064](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208064.zip) | R4-2211005 | DraftCR to TS 38.133: Handover with PSCell from NR-DC to NR-DC with sequential processing | Intel Corporation | Revised |  |
| [R4-2208177](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208177.zip) | R4-2211006 | Test case of handover with PSCell from EN-DC to EN-DC with known target PSCell in FR1 | CATT | Revised |  |
| [R4-2208351](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208351.zip) | R4-2211007 | draft CR on HO with PSCell from NR SA to EN-DC with parallel processing(TC2) | OPPO | Revised |  |
| [R4-2208503](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208503.zip) | R4-2211008 | dratCR on test case for HO with PSCell - TC10 | Nokia, Nokia Shanghai Bell | Revised |  |
| [R4-2208943](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208943.zip) | R4-2211009 | Draft CR on TC for HO with PSCell from NR SA to EN-DC | Huawei, Hisilicon | Revised |  |
| [R4-2209496](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209496.zip) | R4-2211010 | draft CR on test cases for Handover with PSCell from NE-DC to NE-DC with known target PSCell | vivo | Revised |  |
| [R4-2209991](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209991.zip) | R4-2211011 | Draft CR 38.133 on the test case of handover with PSCell from NR-DC to NR-DC with parallel processing | MediaTek Inc. | Revised |  |
| [R4-2210136](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210136.zip) | R4-2211012 | TC for HO with PSCell from NE-DC to NE-DC with unknown target PSCell | Ericsson | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210583 |  | WF on further RRM enhancement for NR and MR-DC – HO with PSCell | vivo | Approved |  |
| R4-2211170 |  | LS on handling of RACH occasion collision between PCell and PSCell for HO with PSCell for NR-U | Ericsson | Approved |  |
| R4-2210997 (revision of [R4-2207770](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207770.zip)) |  | CR on HO with PSCell for NE-DC to NE-DC in TS38.133 R17 | Apple | Agreed |  |
| R4-2210998 (revision of [R4-2207771](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207771.zip)) |  | CR on HO with PSCell for EN-DC to EN-DC in TS36.133 R17 | Apple | Agreed |  |
| R4-2210999 (revision of [R4-2208171](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208171.zip)) |  | Completing requirement of HO with PSCell | CATT | Agreed |  |
| R4-2211191 (revision of [R4-2208501](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208501.zip)) |  | Correction on HO with PSCell requirements in 36133 | Nokia, Nokia Shanghai Bell | Agreed |  |
| R4-2211000 (revision of [R4-2209494](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209494.zip)) |  | CR on R17 core requirements for HO with PSCell | vivo | Agreed |  |
| R4-2211001 (revision of [R4-2210132](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210132.zip)) |  | CR on requirements for HO with PSCell when PSCell is on CCA in EN-DC to EN-DC scenario | Ericsson | Agreed |  |
| R4-2211002 (revision of [R4-2210133](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210133.zip)) |  | CR on requirements for HO with PSCell when PSCell is on CCA in NR SA to EN-DC scenario | Ericsson | Agreed |  |
| [R4-2208106](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208106.zip) | R4-2211003 | CR on test case for Handover with PSCell from NR SA to EN-DC with sequential processing | Xiaomi | 8106 postponed  11003 withdrawn |  |
| [R4-2207772](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207772.zip) | R4-2211004 | Draft CR on TC for HO with PSCell from NR-SA to EN-DC with parallel processing and known FR2 PSCell in TS38.133 R17 | Apple | 7772 postponed  11004 withdrawn |  |
| [R4-2208064](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208064.zip) | R4-2211005 | DraftCR to TS 38.133: Handover with PSCell from NR-DC to NR-DC with sequential processing | Intel Corporation | 8064 postponed  11005 withdrawn |  |
| R4-2211006 (revision of [R4-2208177](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208177.zip)) |  | Test case of handover with PSCell from EN-DC to EN-DC with known target PSCell in FR1 | CATT | Endorsed |  |
| R4-2211007 (revision of [R4-2208351](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208351.zip)) |  | draft CR on HO with PSCell from NR SA to EN-DC with parallel processing(TC2) | OPPO | Endorsed |  |
| [R4-2208503](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208503.zip) | R4-2211008 | dratCR on test case for HO with PSCell - TC10 | Nokia, Nokia Shanghai Bell | 8503 postponed  11008 withdrawn |  |
| R4-2211009 (revision of [R4-2208943](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208943.zip)) |  | Draft CR on TC for HO with PSCell from NR SA to EN-DC | Huawei, Hisilicon | Endorsed |  |
| R4-2211010 (revision of [R4-2209496](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209496.zip)) |  | draft CR on test cases for Handover with PSCell from NE-DC to NE-DC with known target PSCell | vivo | Endorsed |  |
| [R4-2209991](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209991.zip) | R4-2211011 | Draft CR 38.133 on the test case of handover with PSCell from NR-DC to NR-DC with parallel processing | MediaTek Inc. | 9991 postponed  11011 withdrawn |  |
| R4-2211012 (revision of [R4-2210136](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210136.zip)) |  | TC for HO with PSCell from NE-DC to NE-DC with unknown target PSCell | Ericsson | Endorsed |  |

**R4-2210583 WF on further RRM enhancement for NR and MR-DC – HO with PSCell**

*Type: other For: Approval  
 Source: vivo*

**Decision: Approved.**

**R4-2211170 LS on handling of RACH occasion collision between PCell and PSCell for HO with PSCell for NR-U**

*Type: LSout For: Approval  
 Source: Ericsson*

**Decision: Approved.**

**GTW on May 13**

**Issue 1-5: Handling of RACH occasion collision between PCell and PSCell**

* Proposals
  + Option 1: (Ericsson)
    - When PSCell is under CCA, if UE is incapable of simultaneous PRACH preamble transmission in PCell and PSCell, and RACH occasions in PCell and PSCell collide, then UE shall prioritize PRACH preamble transmission on the carrier with CCA. An additional uncertainty term is introduced for the PCell HO delay.
  + Option 2: (Apple)
    - The RO transmission failure due to both UL LBT failure and RO collision with PCell UL channel shall be limited by *PREAMBLE\_TRANSMISSION\_COUNTER*, and the UE behaviour when *PREAMBLE\_TRANSMISSION\_COUNTER* reaches the *preambleTransMax* should follow TS38.321.
* Recommended WF
  + Discuss in the 1st round.

Discussions:

Ericsson: Can we have more time to come back in the 2nd round?

**Issue 2-1: Test cases design principle**

* Proposals
  + Proposal 1: Define test cases for the scenarios including from NR SA to EN-DC, from EN-DC to EN-DC, from NE-DC to NE-DC, and from NR-DC to NR-DC (FR1+FR2 only).
  + Proposal 2: Define test cases to cover both parallel processing and sequential processing cases.
  + Proposal 3: Define test cases with target PCell and target Pscell are both known or both unknown.
  + Proposal 5: Test cases are designed to only verify the known cases for HO w PSCell requirements when parallel processing is assumed.
  + Proposal 6: For test cases related to FR1-FR2 joint testing, test case design is delayed until testability issues are solved.
  + Proposal 7: Do not verify all intra-frequency and inter-frequency HO scenarios in the HO w PSCell test cases.
* Recommended WF
  + Discuss the proposals in the 1st round.

**Discussions:**

Apple: for #1, we would like to remove FR1+FR2 only from the proposal #1.

Qualcomm/Vivo: we do not agree to remove FR1+FR2. We can understand the testability issue but we can delay the FR1+FR2 handover test until the testability issue is addressed.

Mediatek: To remove FR1+FR2 only, then we only have one test for sequential processing.

Huawei: Following the previous principle, we should remove FR1+FR2.

Apple: to Huawei, Rel-16 due to testability issue, we remove FR1+FR2 tests. Now we are discussing not to remove something.

**Agreement:**

* Define test cases for the scenarios including from NR SA to EN-DC, from EN-DC to EN-DC (LTE+FR1 NR), from NE-DC to NE-DC.
* Define test cases to cover both parallel processing and sequential processing cases.
* For test cases related to FR1-FR2 joint testing,
  + Option 1: Test case design is delayed until testability issues are solved
  + Option 2: Introduce the test case and define the applicability
  + Option 3: Do not introduce the test

**Discussion:**

Apple: want to reduce the test case number.

Qualcomm: we do not want to test all the known and unknow. We want focus on unknown.

Vivo: in the real deployment, known case wuld be more important. But we are fine to focus on unknown.

CATT: Is it means that we only have one test case.

Mediatek: We do not have strong view. We are fine to test unknown. Since we only have three scenarios, are we going to have test cases with unknown for all scenarios?

Apple: like EN-DC case, we do not need consider sequential.

CATT: Only define the test with PCell is known and PCell is unknown and do not specify the requirements for other modes?

Apple: only one test cases for each mode.

CATT: we have four combinations. But you just define one. We need other cases.

Mediatek: for sequential and parallel, if not considering FR1+FR2, then we will only one test case for sequential.

CMCC: Only considering unknown case is not enough. We can consider two cases: one is with all unknown and the other with known.

Apple: PCell: unknown; PSCell: unknown and known.

Huawei: for sequential case of SA to EN-DC, we cannot differentiate sequential and parallel processing.

Vivo: we set the maximum delay. If PCell is unknown, how to verify the delay for PScell change.

Apple: to Vivo, we have separate requirement for PCell and PSCell. I wonder why the PScell verifciaiton will be impacted by PCell status.

**Agreement:**

* Do not verify all intra-frequency and inter-frequency HO scenarios in the HO w PSCell test cases.

**Issue 2-5: Test cases list for HO with PSCell**

*Following list of test cases were proposed by moderator for work split before the meeting.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **TC No.** | **TC** | **PCell Handover** | **PSCell addition/change** | **Purpose** | **Clause** | **Note** |
| **1** | Handover with PSCell from NR SA to EN-DC  with sequential processing | NR SA-EUTRA handover with known target  PCell Source Pcell in FR1 | SMTC of target unknown PSCell is present in RRCConnectionReconfiguration Target PSCell in FR1 | To verify delay requirements for handover with PSCell from NR SA to EN-DC with sequential processing | A.6.3.1.x1 |  |
| **2** | Handover with PSCell from NR SA to EN-DC  with parallel processing | NR SA-EUTRA handover with known target  PCell Source Pcell in FR1 | SMTC of  target known PSCell  is NOT present in RRCConnectionReconfiguration Target PSCell in FR1 | To verify delay requirements for handover with PSCell from NR SA to EN-DC with parallel processing | A.6.3.1.x2 |  |
| **3** | Handover with PSCell from NR SA to EN-DC  with sequential processing | NR SA-EUTRA handover with known target  PCell Source Pcell in FR1 | SMTC of target unknown PSCell is present in RRCConnectionReconfiguration Target PSCell in FR2 | To verify delay requirements for handover with PSCell from NR SA to EN-DC with sequential processing | A.7.3.1.x1 | Option 1: No test case Option 2: Only requirements for PSCell are verified |
| **4** | Handover with PSCell from NR SA to EN-DC  with parallel processing | NR SA-EUTRA handover with known target  PCell Source Pcell in FR1 | SMTC of  target known PSCell is NOT present in RRCConnectionReconfiguration Target PSCell in FR2 | To verify delay requirements for handover with PSCell from NR SA to EN-DC with parallel processing | A.7.3.1.x2 | Option 1: No test case Option 2: Only requirements for PSCell are verified |
| **5** | Handover with PSCell from NE-DC to NE-DC with known target PSCell | Intra-frequency handover from FR1 to FR1 with known target PCell | Target known E-UTRA PSCell | To verify delay requirements for handover with PSCell from NE-DC to NE-DC | A.4A.1.x1 |  |
| **6** | Handover with PSCell from NE-DC to NE-DC with unknown target PSCell | Inter-frequency handover from FR1 to FR1 with known target PCell | Target unknown E-UTRA PSCell | To verify delay requirements for handover with PSCell from NE-DC to NE-DC | A.4A.1.x2 |  |
| **7** | Handover with PSCell from NR-DC to NR-DC with parallel processing | Inter-frequency handover from FR1 to FR1 with unknown target PCell | SMTC of target known PSCell is present in reconfigurationWithSync Target PSCell in FR2 | To verify delay requirements for handover with PSCell from NR-DC to NR-DC with parallel processing | A.7.3.1.x3 | Option 1: No test case Option 2: Only requirements for PSCell are verified |
| **8** | Handover with PSCell from NR-DC to NR-DC with sequential processing | Inter-frequency handover from FR1 to FR1 with unknown target PCell | SMTC of target unknown PSCell is present in targetcellSMTC-SCG-r16 but not  in reconfigurationWithSync Target PSCell in FR2 | To verify delay requirements for handover with PSCell from NR-DC to NR-DC with sequential processing | A.7.3.1.x4 | Option 1: No test case Option 2: Only requirements for PSCell are verified |
| **9** | Handover with PSCell from EN-DC to EN-DC with known target PSCell in FR1 | E-UTRA intra-frequency handover | Source PSCell in FR1 Target known PSCell in FR1 | To verify delay requirements for handover with PSCell from EN-DC to EN-DC | A.4.3.x1 |  |
| **10** | Handover with PSCell from EN-DC to EN-DC with known target PSCell in FR2 | E-UTRA inter-frequency handover | Source PSCell in FR1 Target known PSCell in FR2 | To verify delay requirements for handover with PSCell from EN-DC to EN-DC | A.5.3.x1 | Option 1: No test case Option 2: Only requirements for PSCell are verified |
| **11** | Are additional test cases needed? |  |  |  |  |  |

* Proposals
  + Proposal 1: Remove TC3 and TC4 in NR SA to EN-DC since it is similar as TC7 and TC8 in NR-DC to NR-DC
  + Proposal 2: Update the target PCell to unknown cell in TC6 to raise the test coverage for HO with PSCell.
  + Proposal 3: Only focus on PSCell addition / change delay verification in TC7, TC8, TC9 and TC10.
  + Proposal 4: For the test case of HO with PSCell from NR-DC to NR-DC, do not define test cases for sequential processing case.
* Recommended WF
  + Discuss the proposals in the 1st round. Additional comments on adding/removing/changing/confirming test cases in the list are encouraged.

-------------------------------------------------------------------------------------------------------------------------------------------

**[103-e][208] NR\_RRM\_enh2\_3, AI 9.9.1.3, 9.9.2.3 – Qiuge Guo**

**R4-2210280 Email discussion summary for [103-e][208] NR\_RRM\_enh2\_3**

*Type: other For: Information  
 Source: Moderator (CATT)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210477 (from R4-2210280).**

**R4-2210477 Email discussion summary for [103-e][208] NR\_RRM\_enh2\_3**

*Type: other For: Information  
 Source: Moderator (CATT)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210584 | WF on further RRM enhancement for NR and MR-DC - PUCCH SCell activation/deactivation requirements | CATT |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207774 |  | CR on PUCCH SCell activation in TS38.133 R17 | Apple | Merged | Merged R4-2208088 |
| R4-2208088 | R4-2211013 | 38.133 draftCR on PUCCH SCell activation delay | Nokia | Revised | Capture the agreement for PUCCH Scell activation delay |
| R4-2208173 |  | CR on completing PUCCH SCell activation requirement | CATT | Merged | Merged with other CRs |
| R4-2208464 | R4-2211014 | CR on PUCCH SCell activation and deactivation delay requirements | MTK | Revised | Capture the SSB-less case.  Other changes merged with R4-2208088 |
| R4-2208939 | R4-2211015 | CR on PUCCH SCell activation | Huawei | Revised | Capture the agreements for interruption. Other changes merged with R4-2208088 |
| R4-2210135 | R4-2211016 | CR on SCell activation/deactivation with PUCCH | Ericsson | Revised | Capture the agreement for PUCCH Scell with multiple DL Scells. Other changes merged with R4-2208088 |
| R4-2207775 |  | TC for PUCCH Scell activation and deactivation delay requirements of FR1 unknown PUCCH Scell and one FR1 unknown Scell (All NR cells in FR1) R17 | Apple | Postponed | Focus on the test case list and test configuration, and treat the CR in next meeting |
| R4-2208089 |  | draftCR on TC3 PUCCH Scell activation of FR2 known cell in SA | Nokia | Postponed |  |
| R4-2208107 |  | CR on TC for PUCCH Scell activation and deactivation delay requirements | Xiaomi | Postponed |  |
| R4-2208179 |  | Test case for PUCCH Scell activation and deactivation delay requirements | CATT | Postponed |  |
| R4-2208353 |  | draft CR for PUCCH Scell activation and deactivation delay requirements of FR1 known cell for EN-DC (TC10) | OPPO | Postponed |  |
| R4-2208463 |  | Draft CR on TC for PUCCH Scell activation and deactivation delay requirements of FR1 unknown cell | MTK | Postponed |  |
| R4-2208945 |  | Draft CR on TC for PUCCH Scell activation and deactivation | Huawei | Postponed |  |
| R4-2210137 |  | TC for PUCCH Scell activation and deactivation delay requirements of FR2 known cell with FR1 Pcell | Ericsson | Postponed |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210584 | R4-2211208 | WF on further RRM enhancement for NR and MR-DC - PUCCH SCell activation/deactivation requirements | CATT | Approved | For issue 1-1-1 , Option 2 is agreeable. The new agreement for Issue 1-2-3 as below needs be captured |
| R4-2211013 | R4-2211209 | 38.133 draftCR on PUCCH SCell activation delay | Nokia | Endorsed |  |
| R4-2211014 |  | CR on PUCCH SCell activation and deactivation delay requirements | MTK | Agreed |  |
| R4-2211015 |  | CR on PUCCH SCell activation | Huawei | Agreed |  |
| R4-2211016 |  | CR on SCell activation/deactivation with PUCCH | Ericsson | Agreed |  |

**R4-2210584 WF on further RRM enhancement for NR and MR-DC - PUCCH SCell activation/deactivation requirements**

*Type: other For: Approval  
 Source: CATT*

**Decision: Revised to R4-2211208 (from R4-2210584).**

**R4-2211208 WF on further RRM enhancement for NR and MR-DC - PUCCH SCell activation/deactivation requirements**

*Type: other For: Approval  
 Source: CATT*

**Decision: Approved.**

**GTW on May-20**

**Issue 1-2-3: The activation delay requirements for the other DL SCells to be activated?**

*Agreements:*

* For the activation latency requirement of multiple DL Scells being activated with PUCCH Scell by a single MAC command, the legacy requirements (in 8.3.7) are reused.
  + Rel-16 multiple Scell acivation/deactivation searcher assumption is reused here.

**GTW on May 13**

**Core part:**

**Issue 1-2-2: The activation delay requirements for the PUCCH Scell to be activated?**

Proposals

* Option 1: (Intel, CATT, OPPO)
  + PUCCH Scell activation delay requirements can be derived from single PUCCH Scell activation delay by replacing with
* Option 1a: (MTK)
  + PUCCH Scell activation delay requirements can be derived from single PUCCH Scell activation delay by replacing with . And the following updates are made for :
    - Tuncertainty\_MAC\_multiple\_scells is the time period between reception of the last activation command for PDCCH TCI, PDSCH TCI (when applicable) and spatial relation, and Scell activation command of this unknown PUCCH Scell.
    - TSMTC\_MAX\_multiple\_scells and TFirstSSB\_MAX\_multiple\_scells should additionally consider PUCCH Scell.
* Option 2: (Nokia)
  + The PUCCH Scell activation shall be prioritized over the other being-activated DL Scells when they are activated by a single MAC command.
  + The Scell activation delay for PUCCH Scell with multiple DL Scells is the same as the single PUCCH Scell activation delay in clause 8.3.12 i.e. Tdelay\_PUCCH\_Scell.
* Option 3: (Ericsson)
  + Scenario 1: CSI report of all Scells transmitted on SpCell
    - Only valid TA case can be assumed
    - Tactivate\_total = , where:
      * Tdelay\_PUCCH\_ multiple\_Scells = Tactivation\_time\_multiple\_scells + [X] + TCSI\_Reporting, where:
        + Tactivation\_time\_multiple\_scells is the target Scell activation delay in millisecond in multiple Scell activation scenario as specified in section 8.3.7.
        + TCSI\_Reporting is same as specified in clause 8.3.7
  + Scenario 2: CSI report of primary PUCCH group transmitted on Pcell and CSI report of secondary PUCCH group transmitted on PUCCH Scell
    - For valid TA case, Tactivate\_total = , where:
      * Tdelay\_PUCCH\_ multiple\_Scells = Tactivation\_time\_multiple\_scells + [X] + max (TCSI\_Reporting\_Primary\_Group, TCSI\_Reporting\_Secondary\_Group), where:
        + TCSI\_Reporting\_SpCell is the delay (in ms) including uncertainty in acquiring the first available downlink CSI reference resource, UE processing time for CSI reporting and uncertainty in acquiring the first available CSI reporting resources on primary PUCCH group, as specified in TS 38.331 [2].
        + TCSI\_Reporting\_PUCCH\_Scell is the delay (in ms) including uncertainty in acquiring the first available downlink CSI reference resource, UE processing time for CSI reporting and uncertainty in acquiring the first available CSI reporting resources on secondary PUCCH group, as specified in TS 38.331 [2].
    - For invalid TA case, Tactivate\_total = , where:
      * Tdelay\_PUCCH\_ multiple\_Scells = Tactivation\_time\_multiple\_scells + [X] + max (max ((TFirst\_available\_CSI\_PUCCH\_Scell + TCSI\_processing\_PUCCH\_Scell), (T1+T2+T3)) + TCSI\_reporting\_after\_PUCCH\_Scell, TCSI\_Reporting\_SpCell + Tuncertainity), where:
        + Tfirst\_available\_CSI\_ PUCCH\_Scell: the delay uncertainty in acquiring the first available downlink CSI reference resource for PUCCH Scell.
        + TCSI\_processing\_ PUCCH\_Scell: the UE processing time for CSI reporting of PUCCH Scell.
        + TCSI\_reporting\_after\_ PUCCH\_Scell the delay uncertainty in acquiring the first available CSI reporting resource after T3
        + Tuncertainity is uncertainty of first available CSI reporting resource, if CSI report on primary PUCCH group collides with PRACH on PUCCH Scell. In other cases, it is zero.
    - When the PRACH and CSI report partially overlap in time during multiple Scell activation involving PUCCH Scell, UE should transmit PRACH and postpone the CSI report to next CSI reporting instance.
* Recommended WF
  + *Need more discussion*

**Discussion:**

Nokia: could companies clarify the scenario? Are we assume all the Scell belonging to the same PUCCH group, or assume belonging to primary PUCCH group or secondary PUCCH group?

CATT: The same pucch group.

Ericsson: both scenarios are equally important. If some requirement is not defined, there will be limitation.

Qualcomm: The requirement should be generalized as much as possible. The practicaly way is to focus on the most practical scenario. First scenario should be considered.

Nokia: in some cases, network wants to increase the throughput. There would be combiantions of downlink cell + pucch group.

Ericsson: we do not need to spend time to define the requirements when all the scells belong to the same group.

Qualcomm: our concern is that other cells belong to primiary cell have already sent ack. The scenario mentioned by Ericsson and Nokia makes sense.

Apple: It is not necessary to consider scell belonging to different group.

Ericsson: the situation is the same for both cases.

Mediatek: Think the discussion for the same group is needed. The PUCCH Scell should be addtionaly considered. RAN4 may can define the requirement when all the cells belong to the same group first.

Nokia: Our intention is to define the requirement for the scenario which will happen. Apple comment gives a good approach to define the general requirement. This general scenario won’t take too much time.

Apple: to Ericsson and Nokia, we cannot simple reuse the existing requirement for primary PUCCH group due to collision issue.

**Discussion points:**

* Define the requirement assuming there is no interruption across the PUCCH groups
* Do not preclude the scenario where there are two PUCCH groups.

**Issue 1-2-3: The activation delay requirements for the other DL SCells to be activated?**

Proposals

* Option 1: (Qualcomm)
  + For the activation latency requirement of multiple DL Scells being activated in parallel with PUCCH Scell, the legacy requirements (in 8.3.7) are reused with the following update.
    - TCSI\_reporting is the delay (in ms) including uncertainty in acquiring the first available downlink CSI reference resource, UE processing time for CSI reporting and uncertainty in acquiring the first available CSI reporting resources as specified in TS 38.331 [2] which cannot be earlier than the PUCCH Scell activation completion
  + If FR2 PUCCH Scell is known, DL Scells to be activated in parallel with the PUCCH Scell in the same band are considered known FR2 Scell in terms of latency requirement, i.e. no L1-RSRP measurement and report are included in the requirement.
* Option 2: (Intel, Nokia, OPPO)
  + The existing Scell activation delay requirement for deactivated Scell with multiple Downlink Scells defined in clause 8.3.7 of current specification 38.133 can be reused.
* Option 3: (CATT)
  + For the case that the downlink Scells are within different PUCCH group from the activated PUCCH Scell, the existing Scell activation delay requirement for deactivated Scell with multiple Downlink Scells defined in clause 8.3.7 of current specification 38.133 can be reused.
  + For the case that downlink Scells are within the same PUCCH group with the activated PUCCH Scell, the activation delay requirements are same as that for PUCCH Scell (as defined in issue 1-2-2).
* Option 4: (Huawei, MTK)
  + For Scell to be activated with PUCCH Scell which is in the primary PUCCH group, legacy requirements for Scell activation with multiple Scells can apply.
  + For Scell to be activated with PUCCH Scell which is in the secondary PUCCH group, extra delay to wait for UE accomplishing activation of PUCCH Scell needs to be considered in addition to legacy requirements for Scell activation with multiple Scells.
* Recommended WF
  + *Need more discussion*

**Discussion:**

Ericsson: PUCCH SCell and SCell should no be considered separately. We could reuse Rel-16 framework. We don’t need consider them separately.

Qualcomm: we have the same idea. In Rel-17 there is new capability. This Scell can transmit CQI for PCell.

Mediatek: To Ericsson, what is it mean to consider PUCCH SCell and SCell. Does it mean UE should have separately searchers? If so we have concern.

Huawei: does it mean the delay is the same for PUCCH scell and other scell. There is no priority.

Mediatek: the single searcher will be shared.

Apple: This agreement applies to the scells belonging to the same PUCCH scell group. We need consider if there is any interruption across.

Qualcomm: the same comment. The cross pucch interruption. The agreement does not mean any prioritization.

Huawei: agree with Mediatek one searcher and agree with Qualcomm about CQI delay. There are some components shared by cells. If there is no priority, all the other scell has to wait after the …

Nokia: Regarding the tentative test, it is relavent to our previous issues. We also have concern as Huawei about the delay.

**Perf part:**

**Sub-topic 2-2 Test case list**

-----------------------------------------------------------------------------------------------------------------------------------

**R4-2207766 Work plan for R17 FeRRM performance part**

*Type: Work Plan For: Approval  
 Source: Apple*

**Decision: Approved.**

#### 9.9.1 RRM core requirement maintenance

**R4-2208092 38.133 CR on introduction of SRS antenna port switching (resubmission)**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2296 rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

##### 9.9.1.1 SRS antenna port switching

**R4-2207767 CR on SRS antenna port switching in TS38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2289 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2208090 Interruption requirements at SRS antenna port switching**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208093 draftCR on interruptions at SRS antenna switching**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2210993 (from R4-2208093).**

**R4-2210993 draftCR on interruptions at SRS antenna switching**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2208313 Discussion on interruption due to SRS antenna port switching**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2208316 CR on interruption limitation due to SRS antenna switching**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2310 rev Cat: F (Rel-17)  
  
 Source: LG Electronics Inc.*

**Decision: Not pursued.**

**R4-2210994 CR on interruption limitation due to SRS antenna switching**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2310 rev Cat: F (Rel-17)  
  
 Source: LG Electronics Inc.*

**Decision: Withdrawn.**

**R4-2208935 CR on SRS antenna port switching requirements 36.133**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7154 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2210995 (from R4-2208935).**

**R4-2210995 CR on SRS antenna port switching requirements 36.133**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7154 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

**R4-2208936 Draft CR on SRS antenna port switching requirements 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

**R4-2209133 Draft CR on SRS antenna port switching requirements 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2355 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Merged (with R4-2208093).**

**R4-2210130 Remaining issue in SRS antenna port switching**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Remianing issues of SRS antenna port switching are discussed

**Decision: Noted.**

##### 9.9.1.2 HO with PSCell

**R4-2207769 On remaining issues of HO with PScell**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2207770 CR on HO with PSCell for NE-DC to NE-DC in TS38.133 R17**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2290 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2210997 (from R4-2207770).**

**R4-2210997 CR on HO with PSCell for NE-DC to NE-DC in TS38.133 R17**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2290 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2207771 CR on HO with PSCell for EN-DC to EN-DC in TS36.133 R17**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7149 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2210998 (from R4-2207771).**

**R4-2210998 CR on HO with PSCell for EN-DC to EN-DC in TS36.133 R17**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7149 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2208170 Discussion on issues for requirement of HO with PSCell**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208171 Completing requirement of HO with PSCell**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2301 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Revised to R4-2210999 (from R4-2208171).**

**R4-2210999 Completing requirement of HO with PSCell**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2301 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2208500 Correction on HO with PSCell requirements in 38133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2323 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Correction on HO with PSCell requirements in 38.133

**Decision: Merged (with R4-2208171).**

**R4-2208501 Correction on HO with PSCell requirements in 36133**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7153 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Correction on HO with PSCell requirements in 36.133

**Decision: Revised to R4-2211191 (from R4-2208501).**

**R4-2211191 Correction on HO with PSCell requirements in 36133**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7153 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Correction on HO with PSCell requirements in 36.133

**Decision: Agreed.**

**R4-2208530 CR on Handover with PSCell**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2326 rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Merged (with R4-2208171).**

**R4-2208937 CR on HO with PSCell requirements**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2349 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Merged (with R4-2208171).**

**R4-2209494 CR on R17 core requirements for HO with PSCell**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2379 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Revised to R4-2211000 (from R4-2209494).**

**R4-2211000 CR on R17 core requirements for HO with PSCell**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2379 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Agreed.**

**R4-2210131 Discussion RRM requirements for handover with PSCell for NR-U**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

HO with PSCell requirements for NR-U are discussed

**Decision: Noted.**

**R4-2210132 CR on requirements for HO with PSCell when PSCell is on CCA in EN-DC to EN-DC scenario**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7158 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR to introduce HO with PSCell requirements for PSCell with CCA

**Decision: Revised to R4-2211001 (from R4-2210132).**

**R4-2211001 CR on requirements for HO with PSCell when PSCell is on CCA in EN-DC to EN-DC scenario**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7158 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR to introduce HO with PSCell requirements for PSCell with CCA

**Decision: Agreed.**

**R4-2210133 CR on requirements for HO with PSCell when PSCell is on CCA in NR SA to EN-DC scenario**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2393 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR to introduce HO with PSCell requirements for PSCell with CCA

**Decision: Revised to R4-2211002 (from R4-2210133).**

**R4-2211002 CR on requirements for HO with PSCell when PSCell is on CCA in NR SA to EN-DC scenario**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2393 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR to introduce HO with PSCell requirements for PSCell with CCA

**Decision: Agreed.**

##### 9.9.1.3 PUCCH SCell activation/deactivation

**R4-2207773 On remaining issue for PUCCH SCell activation**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2207774 CR on PUCCH SCell activation in TS38.133 R17**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2291 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Merged (with R4-2208088).**

**R4-2207956 PUCCH SCell activation and deactivation**

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

**Decision: Noted.**

**R4-2208063 Discussion on remaining issue about PUCCH SCell activation**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208087 Open issues on PUCCH SCell activation**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208088 draft CR on PUCCH SCell activation delay**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2211013 (from R4-2208088).**

**R4-2211013 draft CR on PUCCH SCell activation delay**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2211209 (from R4-2211013).**

**R4-2211209 draft CR on PUCCH SCell activation delay**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2208172 Discussion on remaining issues for PUCCH Scell activation**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208173 Completing PUCCH SCell activation requirement**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2302 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Merged.**

**R4-2208349 Initial discussion on test cases for PUCCH SCell ActivationDeactivation**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208462 Discussion on PUCCH SCell activation and deactivation**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2208464 CR on PUCCH SCell activation and deactivation delay requirements**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2318 rev Cat: F (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Revised to R4-2211014 (from R4-2208464).**

**R4-2211014 CR on PUCCH SCell activation and deactivation delay requirements**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2318 rev Cat: F (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Agreed.**

**R4-2208938 Discussion on maintenance for PUCCH SCell activation**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2208939 CR on maintenance for PUCCH SCell activation**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2351 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211015 (from R4-2208939).**

**R4-2211015 CR on maintenance for PUCCH SCell activation**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2351 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

**R4-2210134 RRM requirements for SCell activation/deactivation with PUCCH**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Remaining issues are discussed for PUCCH SCell activation.

**Decision: Noted.**

**R4-2210135 CR on SCell activation/deactivation with PUCCH**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2394 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR on PUCCH SCell activation for multiple SCells.

**Decision: Revised to R4-2211016 (from R4-2210135).**

**R4-2211016 CR on SCell activation/deactivation with PUCCH**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2394 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR on PUCCH SCell activation for multiple SCells.

**Decision: Agreed.**

#### 9.9.2 RRM performance requirements

##### 9.9.2.1 SRS antenna port switching

**R4-2207730 SRS RRM performance scope**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Decision: Noted.**

**R4-2207731 SRS configuration correction**

*Type: CR For: Approval  
 38.133 v16.11.0 CR-2285 rev Cat: F (Rel-16)  
  
 Source: Qualcomm, Inc.*

**Decision: Not pursued.**

**R4-2207768 On test case list for SRS antenna port switching**

*Type: discussion For: Approval  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2210996 (from R4-2207768).**

**R4-2210996 On test case list for SRS antenna port switching**

*Type: discussion For: Approval  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Approved.**

**R4-2208065 DraftCR to TS 38.133: NR FR1 interruptions at NR SRS antenna port switching with more than 1 SRS symbol in NR-CA**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Postponed.**

**R4-2208091 Discussion on test cases for SRS antenna port switching**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208094 draftCR on TC1 SRS antenna switching with 1 SRS symbol in sync EN-DC**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2208108 Draft CR on NR FR1 - E-UTRAN interruptions at NR SRS antenna port switching with 1 SRS symbol in asynchronous NE-DC**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2299 rev Cat: B (Rel-17)  
  
 Source: Xiaomi*

**Decision: Postponed.**

**R4-2208174 Discussion on test for SRS antenna port switching**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208175 Test case for Interruptions at NR FR1 one SRS symbol with antenna port switching in asynchronous EN-DC**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision: Postponed.**

**R4-2208350 draft CR on NR FR1-E-UTRAN interruptions at NR SRS antenna port switching with 1 SRS symbol in synchronous NE-DC (TC6)**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: OPPO*

**Decision: Postponed.**

**R4-2208461 Draft CR on TC for interruptions at SRS antenna port switching with more than 1 SRS symbol in async NE-DC**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Postponed.**

**R4-2208520 Discussion on test cases for SRS antenna port switching**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2208940 Discussion on performance requirements for SRS antenna switching**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2208941 Draft CR on TC for NR SRS antenna port switching with more than 1 SRS symbol in asynchronous EN-DC**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Postponed.**

**R4-2209492 Discussion on test cases for R17 interruption requirements for SRS antenna switching**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2209493 draft CR on test cases for NR FR1 interruptions at NR SRS antenna port switching with 1 SRS symbol in NR-CA**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

**Decision: Postponed.**

##### 9.9.2.2 HO with PSCell

**R4-2207772 Draft CR on TC for HO with PSCell from NR-SA to EN-DC with parallel processing and known FR2 PSCell in TS38.133 R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Apple*

**Decision: Postponed.**

**R4-2211004 Draft CR on TC for HO with PSCell from NR-SA to EN-DC with parallel processing and known FR2 PSCell in TS38.133 R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2208064 DraftCR to TS 38.133: Handover with PSCell from NR-DC to NR-DC with sequential processing**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Postponed.**

**R4-2211005 DraftCR to TS 38.133: Handover with PSCell from NR-DC to NR-DC with sequential processing**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Withdrawn.**

**R4-2208106 CR on test case for Handover with PSCell from NR SA to EN-DC with sequential processing**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2297 rev Cat: B (Rel-17)  
  
 Source: Xiaomi*

**Decision: Postponed.**

**R4-2211003 CR on test case for Handover with PSCell from NR SA to EN-DC with sequential processing**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2297 rev Cat: B (Rel-17)  
  
 Source: Xiaomi*

**Decision: Withdrawn.**

**R4-2208176 Discussion on test for HO with PSCell**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208177 Test case of handover with PSCell from EN-DC to EN-DC with known target PSCell in FR1**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision: Revised to R4-2211006 (from R4-2208177).**

**R4-2211006 Test case of handover with PSCell from EN-DC to EN-DC with known target PSCell in FR1**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2208351 draft CR on HO with PSCell from NR SA to EN-DC with parallel processing(TC2)**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: OPPO*

**Decision: Revised to R4-2211007 (from R4-2208351).**

**R4-2211007 draft CR on HO with PSCell from NR SA to EN-DC with parallel processing(TC2)**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: OPPO*

**Decision: Endorsed.**

**R4-2208458 RRM performance requirements for HO with PSCELL**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Withdrawn.**

**R4-2208502 discussion on HO with PSCell performance requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

discussion on HO with PSCell performance requirements

**Decision: Noted.**

**R4-2208503 dratCR on test case for HO with PSCell - TC10**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

DraftCR for HO with PSCell test case - TC10

**Decision: Postponed.**

**R4-2211008 dratCR on test case for HO with PSCell - TC10**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

DraftCR for HO with PSCell test case - TC10

**Decision: Withdrawn.**

**R4-2208518 Discussion on test cases for HO with PSCell**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2208942 Discussion on performance requirements for HO with PSCell**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2208943 Draft CR on TC for HO with PSCell from NR SA to EN-DC**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211009 (from R4-2208943).**

**R4-2211009 Draft CR on TC for HO with PSCell from NR SA to EN-DC**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209495 Discussion on test cases for R17 requirements for HO with PSCell**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2209496 draft CR on test cases for Handover with PSCell from NE-DC to NE-DC with known target PSCell**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

**Decision: Revised to R4-2211010 (from R4-2209496).**

**R4-2211010 draft CR on test cases for Handover with PSCell from NE-DC to NE-DC with known target PSCell**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2209991 Draft CR 38.133 on the test case of handover with PSCell from NR-DC to NR-DC with parallel processing**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Postponed.**

**R4-2211011 Draft CR 38.133 on the test case of handover with PSCell from NR-DC to NR-DC with parallel processing**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Withdrawn.**

**R4-2210114 RRM performance requirements for HO with PSCELL**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2210136 TC for HO with PSCell from NE-DC to NE-DC with unknown target PSCell**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

TC for HO with PSCell from NE-DC to NE-DC with unknown target PSCell

**Decision: Revised to R4-2211012 (from R4-2210136).**

**R4-2211012 TC for HO with PSCell from NE-DC to NE-DC with unknown target PSCell**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

TC for HO with PSCell from NE-DC to NE-DC with unknown target PSCell

**Decision: Endorsed.**

##### 9.9.2.3 PUCCH SCell activation/deactivation

**R4-2207775 TC for PUCCH SCell activation and deactivation delay requirements of FR1 unknown PUCCH SCell and one FR1 unknown SCell (All NR cells in FR1) R17**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Apple*

**Decision: Postponed.**

**R4-2207957 Performance requirements**

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

**Decision: Noted.**

**R4-2208089 draftCR on TC3 PUCCH SCell activation of FR2 known cell in SA**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2208107 CR on TC for PUCCH SCell activation and deactivation delay requirements**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2298 rev Cat: B (Rel-17)  
  
 Source: Xiaomi*

**Decision: Postponed.**

**R4-2208178 Discussion on test for PUCCH SCell activation**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208179 Test case for PUCCH SCell activation and deactivation delay requirements**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

**Decision: Postponed.**

**R4-2208352 Maintenance to requirements for PUCCH SCell activationdeactivation**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208353 draft CR for PUCCH SCell activation and deactivation delay requirements of FR1 known cell for EN-DC (TC10)**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: OPPO*

**Decision: Postponed.**

**R4-2208463 Draft CR on TC for PUCCH SCell activation and deactivation delay requirements of FR1 unknown cell**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Postponed.**

**R4-2208519 Discussion on test cases for PUCCH SCell activation/deactivation**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2208944 Discussion on performance requirements for PUCCH SCell activation**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2208945 Draft CR on TC for PUCCH SCell activation and deactivation**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Postponed.**

**R4-2210137 TC for PUCCH SCell activation and deactivation delay requirements of FR2 known cell with FR1 PCell**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

TC for PUCCH SCell activation and deactivation delay requirements of FR2 known cell with FR1 PCell

**Decision: Postponed.**

### 9.10 NR and MR-DC measurement gap enhancements

#### 9.10.1 RRM core requirement maintenance

**[103-e][209] NR\_MG\_enh\_1, AI 9.10.1, 9.10.1.2, 9.10.2.2 – Ato Yu**

**R4-2210281 Email discussion summary for [103-e][209] NR\_MG\_enh\_1**

*Type: other For: Information  
 Source: Moderator (Mediatek)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210478 (from R4-2210281).**

**R4-2210478 Email discussion summary for [103-e][209] NR\_MG\_enh\_1**

*Type: other For: Information  
 Source: Moderator (Mediatek)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210585 | WF on R17 NR MG enhancements – multiple concurrent MGs | MediaTek inc |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207756 | N.A | On multiple concurrent and independent MG patterns | Apple | Noted |  |
| R4-2207757 | R4-2211017 | draftCR on concurrent gaps | Apple | Revised |  |
| R4-2208032 | N.A | Open issues in core requirements for multiple concurrent measurement gaps | Qualcomm Incorporated | Noted |  |
| R4-2208066 | N.A | Discussion on concurrent measurement gaps in NR | Intel Corporation | Noted |  |
| R4-2208104 | N.A | Discussion on the remaining issues for concurrent MGs | Xiaomi | Noted |  |
| R4-2208206 | N.A | Discussion on the maintenance for multiple concurrent and independent MG patterns | CATT | Noted |  |
| R4-2208273 | N.A | Issues for multiple concurrent and independent MG pattern maintenance | vivo | Noted |  |
| R4-2208296 | N.A | Discussion on remaining issues of concurrent gaps | MediaTek inc. | Noted |  |
| R4-2208297 | N.A | Maintenance CR on TS38.133 for L1 impact due to concurrent MG | MediaTek inc. | Agreed |  |
| R4-2208356 | N.A | On multiple concurrent and independent MG | OPPO | Noted |  |
| R4-2208357 | R4-2211018 | CR to maintain concurrent measurement gap in TS 38.133 | OPPO | Revised |  |
| R4-2208522 | N.A | Discussion on multiple concurrent and independent MG patterns | CMCC | Noted |  |
| R4-2208528 | R4-2211019 | CR on concurrent measurement gaps | CMCC | Revised |  |
| R4-2208592 | N.A | Discussion on remaining aspects of concurrent measurement gaps | Nokia, Nokia Shanghai Bell | Noted |  |
| R4-2208593 | R4-2211020 | CR for remaining aspects of concurrent measurement gaps (section 8) | Nokia, Nokia Shanghai Bell | Revised |  |
| R4-2208594 | R4-2211021 | CR for remaining aspects of concurrent measurement gaps (section 9) | Nokia, Nokia Shanghai Bell | Revised |  |
| R4-2209205 | N.A | Discussion on remaining issues for multiple concurrent MGs | Huawei, Hisilicon | Noted |  |
| R4-2209206 | R4-2211022 | CR on collision handling for concurrent MGs | Huawei, Hisilicon | Revised |  |
| R4-2209449 | N.A | Discussion on Multiple concurrent MG patterns | Ericsson | Noted |  |
| R4-2209450 | N.A | CR on concurrent gaps(9.1.8.2) | Ericsson | Merged |  |
| R4-2207758 | N.A | On multiple concurrent and independent MG patterns performance | Apple | Noted |  |
| R4-2208033 | N.A | On performance requirements for multiple concurrent measurement gaps | Qualcomm Incorporated | Noted |  |
| R4-2208068 | N.A | Discussion on NR concurrent MG test cases configuration and list | Intel Corporation | Noted |  |
| R4-2208208 | N.A | Test cases for multiple concurrent and independent MG patterns | CATT | Noted |  |
| R4-2208301 | N.A | Discussion on test case scope for concurrent gaps | MediaTek inc. | Noted |  |
| R4-2208521 | N.A | Discussion on test cases for multiple concurrent and independent MG patterns | CMCC | Noted |  |
| R4-2209210 | N.A | Discussion on test cases for concurrent MGs | Huawei, Hisilicon | Noted |  |
| R4-2209451 | N.A | Test case for multiple concurrent MG patterns | Ericsson | Noted |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210585 |  | WF on R17 NR MG enhancements – multiple concurrent MGs | MediaTek inc | Approved |  |
| R4-2211017 |  | draftCR on concurrent gaps | Apple | Endorsed |  |
| R4-2211018 |  | CR to maintain concurrent measurement gap in TS 38.133 | OPPO | Agreed |  |
| R4-2211019 |  | CR on concurrent measurement gaps | CMCC | Agreed |  |
| R4-2211020 |  | CR for remaining aspects of concurrent measurement gaps (section 8) | Nokia, Nokia Shanghai Bell | Agreed |  |
| R4-2211021 |  | CR for remaining aspects of concurrent measurement gaps (section 9) | Nokia, Nokia Shanghai Bell | Agreed |  |
| R4-2211022 |  | CR on collision handling for concurrent MGs | Huawei, Hisilicon | Agreed |  |

**R4-2210585 WF on R17 NR MG enhancements – multiple concurrent MGs**

*Type: other For: Approval  
 Source: Mediatek*

**Decision: Approved.**

**GTW on May 09**

**Issue 2-1-1: Whether concurrent gaps are allowed in the case when only E-UTRAN measurement objectives are configured**

* Proposals
  + Option 1: Intel, CATT, vivo, CMCC, Nokia, ZTE, Ericsson
    - Yes. And there is no any limitation in network configuration
  + Option 2a: Apple
    - No. Concurrent gaps shall not be configured
  + Option 3: Apple, Xiaomi, vivo, MTK, Huawei, OPPO
    - Up to UE capability
      * For UE supporting the capability, different LTE MOs can be associated with multiple MGs.
      * For UE not supporting the capability, all LTE MOs can be associated with only a single MG.
* Recommended WF
  + Collect company vies in the 1st round.

**Discussions:**

Moderator: this issue has been discussed for many meetings. In short, option 1 camp does not want to limit. The other camp… There is no much intention to have enhancement for LTE. Let us go with UE capability.

Intel: we have questions if the new capability is needed.

Mediatek: we already have agreed the capability. But in that capability, we do not mention. We need the new capability.

Nokia: We agree to limit the impact on LTE side. Whether the proximity rule be introduced to address the concern?

Apple: To Nokia, the proximity cannot address the issue. The two concurrent gap can be configured with interval of 5ms.

**Agreement:** agree on Option 3.

**Issue 2-3-1: Whether to define the overhead cap**

* Proposals
  + Option 1: Apple, Xiaomi, vivo, Huawei
    - Yes
  + Option 2: QC, Intel, CATT, CMCC, Nokia, ZTE
    - No
  + Option 3: Apple, MTK
    - Up to UE capability
  + Option 4: OPPO
    - Postpone the discussion to Rel-18.
  + Option 5: Ericsson
    - Handling this issue by extending the dropping rule, instead of defining an overhead cap.
* Recommended WF
  + Collect company vies in the 1st round.

**Discussion:**

Ericsson: Our first position is option 2. We propose option 5 as compromised solution to clarify the UE behavior. If option 5 is not acceptable, we prefer option 3.

Huawei: our intention is to avoid the configuration with 20ms MGRP for each of concurrent gap. Based on the commetns from companies, there would be a compromise going with either option 5 or variant of option 5. Then we can avoid defining the new capability. If not acceptable, we would like to go with option 3.

Nokia: our preference is option 2. We propose that the MGRP for each MG cannot be smaller than 40ms (option 3 from Issue 2-3-2).

Intel: we also can compromise on option 5. If option 5 is not agreed, then we can discuss it in the next release.

LGE: we prefer option 1 but we can compromise to option 3. Option 5 is complex. Option 5 needs more discussion.

CATT: we prefer option 2 and we can compromise to option 5 to avoid the additional UE capability. For option 5, extending the promixity should be limited to 20ms MGRP.

Apple: we propose option 1 and we can compromise to option 3. Option 5 may work with some clarification, e.g., on dropping rule. MGRP should not be larger than 40ms, which means different dropping rule for UE and may need the additional UE capability.

Vivo: we can go with option 3. Regarding option 5, it is not clear to do extension.

Ericsson: for option 5, the detailed solution is captured in the next issue. Our solution is to extend the proximate rule. We also hear the comment on 40ms. If one measurement gap is configured with 20ms and other is configured with 160, this scenario should not be precluded.

ZTE: we can compromise to option 5. We can use the larger X value. X=4.

Nokia: Maybe option 5 and 40ms rule need more discussion.

Qualcomm: The best compromise is option 3. The combination of two gaps can be configured. Both gap can be 20ms. We do not need to refer to dropping rule.

CMCC: in general we are OK with option 5. We do not expect too much extension on dropping rule.

Huawei: similar thinking as Qualcomm. We prefer to define overhead of gap with variant of option 5. It can be 20ms for one of them but not for both.

**Agreement:** Down-select to Option 3 and Option 5. For option 5, the detailed solution needs further discussion.

**Issue 3-2: Whether to introduce test cases for L1 impact**

* Proposals
  + Option 1: Apple, Intel, MTK
    - Yes
  + Option 2: QC, CATT, Huawei, Ericsson
    - No
* Recommended WF
  + Collect views from companies

**Discussions:**

CATT: For L1 measurement, we do not need the measurement gap. How to define the test case if proponent want to configure the overlapped measurement with the gaps.

Apple: We observe the impact of L1 impact. We are also fine with no test. To CATT, we think it is testable.

Qualcomm: we prefer not to. One question on option 2 is for the proponet to consider the separate test or combine it in other test.

Apple: To Qualcomm, we can combine it with dropping rule test case.

Mediatek: we propose this item. Apple said there is new UE behavior. It deserves some test. We are also open to discussion. If we want to test it, we need the additional test cases. The test would be different from L3 test cases.

Ericsson: We want to look into the impact on L1 impact. We can check the fundamental impact. We think skip it if the test is limited. It may be dedicated test. Combining with the normal test may be complicated.

CATT: we have another issue. What is the difference from inter-frequency without gap? The dropping rule mayb need be tested. It can be tested in L3 test. What is the difference on overlapping rule test between L1 and L3?

Mediatek: fundamentally CATT is right. The reasons we mention RLM … is that the test will be complicated.

**Agreement:** Do not introduce the test for L1 impact.

------------------------------------------------------------------------------------------------------------------------------------

**[103-e][210] NR\_MG\_Part\_2, AI 9.10.1.1, 9.10.2.1 – Rui Huang**

**R4-2210282 Email discussion summary for [103-e][210] NR\_MG\_Part\_2**

*Type: other For: Information  
 Source: Moderator (Intel)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210479 (from R4-2210282).**

**R4-2210479 Email discussion summary for [103-e][210] NR\_MG\_Part\_2**

*Type: other For: Information  
 Source: Moderator (Intel)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210586 | R17 NR MG enhancements – Pre-configured MG | Intel |  |
| R4-2210587 | LS on Pre-configured MG | OPPO | To: RAN\_2; Cc:  Up to the issue 1-2-2 |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2208295](file:///C:\Users\rhuang5\OneDrive%20-%20Intel%20Corporation\Documents\my_work\LTE_A\RAN4\103e\Docs\R4-2208295.zip) |  | Maintenance CR on TS38.133 for pre-MG | MTK | Merged | The change part of 8.19. can be merged with R4-2208459  The change part of 9.1.7.1& 9.1.7.2 can be merged with R4-2209204  The change part of 9.1.7.3 can be merged with R4-2210167 |
| [R4-2208355](file:///C:\Users\rhuang5\OneDrive%20-%20Intel%20Corporation\Documents\my_work\LTE_A\RAN4\103e\Docs\R4-2208355.zip) |  | CR to maintain pre-configured measurement gap in TS 38.133 | Oppo | Merged | The change part of 9.1.7.1& 9.1.7.2 can be merged with R4-2209204  The change part of 9.1.7.3 can be merged with R4-2210167 |
| [R4-2208459](file:///C:\Users\rhuang5\OneDrive%20-%20Intel%20Corporation\Documents\my_work\LTE_A\RAN4\103e\Docs\R4-2208459.zip) | R4-2211023 | draftCR on Pre-MG core maintenance (8.19) | Apple | Revised | Combined all changes on 8.19 from R4-2208295, R4-2209204. |
| [R4-2209204](file:///C:\Users\rhuang5\OneDrive%20-%20Intel%20Corporation\Documents\my_work\LTE_A\RAN4\103e\Docs\R4-2209204.zip) | R4-2211024 | CR on pre-MG related requirements (9.1.7.1 &9.1.7.2) | Huawei | Revised | Combine all changes on 9.1.7.1 &9.1.7.2 from R4-2208295, R4-2208355, R4-2210167  Remove the change part of 9.1.7.3 which can be merged with R4-2210167  Remove the change part of 8.19. which can be merged with R4-2208459 |
| [R4-2210167](file:///C:\Users\rhuang5\OneDrive%20-%20Intel%20Corporation\Documents\my_work\LTE_A\RAN4\103e\Docs\R4-2210167.zip) | R4-2211025 | Correction to Pre-MG requirements in TS 38.133 (9.1.7.3) | Ericsson | Revised | Combine all changes on 9.1.7.3 from R4-2208295, R4-2208355, R4-2209204  Remove the change part of 9.1.7.1 &9.1.7.2 which can be merged with R4-2209204 |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210586 |  | WF on R17 NR MG enhancements – Pre-configured MG | Intel | Approved |  |
| R4-2210587 |  | LS on Pre-configured MG | OPPO | Approved |  |
| R4-2211023 |  | draftCR on Pre-MG core maintenance (8.19) | Apple | Endorsed |  |
| R4-2211024 |  | CR on pre-MG related requirements (9.1.7.1 &9.1.7.2) | Huawei | Agreed |  |
| R4-2211025 |  | Correction to Pre-MG requirements in TS 38.133 (9.1.7.3) | Ericsson | Agreed |  |

**R4-2210586 R17 NR MG enhancements – Pre-configured MG**

*Type: other For: Approval  
 Source: Intel*

**Decision: Approved.**

**R4-2210587 LS on Pre-configured MG**

*Type: other For: Approval  
 Source: OPPO*

**Decision: Approved.**

**GTW on May 09**

**Issue 2-2-2 Test cases for the reporting delay of intra-frequency measurement with gap**

* Option 1 (CATT): No need
* Option 2 (ZTE, vivo, Nokia): Define TCs to verify whether UE can perform measurement without/with gap from the first occasion after all switching delay
* Option 3(Intel, Qualcomm, E///, Vivo, Nokia): Combine the test cases for the intra-frequency measurement reporting with that for Pre-MG activation/deactivation delay which is triggered by BWP switching

Recommended WF: Further discussion needed. Collect companies’ views.

**Discussions:**

Mediatek: we also support option 3. We can combine the new functionality.

Intel: we also support option 3. We want to check if we need test other inter-frequency.

CATT: support option 3. We would like to clarify. We are fine to combine the test for measurement reporting for not only triggered by BWP switching but also event triggering.

Huawei: we can support both option 2 and 3. The title is the reporting delay. But we know there will be BWP switching. We want to check with company the common understanding.

Vivo: support option 3. Option 2 and option 3 do not conflict. We need check option 2 is agreeable or not.

Intel: for Huawei comment, yes. Even if the title is for intra-frequency, the functionality under verification can cover measuemetn reporting and BWP switching.

ZTE: we support option 2 and option 3. The activation and transition delay is very important features proposed in pre-MG. WE need to test the environment. For option 3, only BWP switching triggering is not enough.

Qualcomm: I am not sure if we need test both with/without gap and separate tests.

Intel: we share the simiarl view as Qualcomm.

Mediate: similar view as Intel.

**Agreement:**

* Combine the test cases for the intra-frequency measurement reporting with that for Pre-MG activation/deactivation delay which is triggered by BWP switching

**Issue 2-2-3 Test cases for the reporting delay of inter-frequency measurement with gap**

* Option 1 (Qualcomm, E///, Nokia, [Intel]): Inter-frequency measurement reporting which is triggered by MO remove/addition

Recommended WF: Further discussion needed. Collect companies’ views.

**Discussions:**

Huawei: is it a separate test case?

Intel: our intention is to introduce the more triggered event. We also have some concern on this one. For inter-frequency, we do not need the trigger event. We do not need define the test cases for intre—frequency.

Qualcomm: there are two issues. Which trigger event needs be covered in the test and which report will be covered? The trigger event needs be covered. We do not want to define too many different test cases.

Apple: we think the test case is not needed. It is like the RRC case. We would like to control the test case number.

Ericsson: we should verify inter-frequency. There is potential combining it with other test case. We need to look into more details. We support this test.

**Issue 1-1-1 Additional trigger events for pre-MG activation/deactivation**

[Moderator notes: In R4#102-e the following agreements on Pre-MG used for PRS measurement achieved:

* RAN4 considers that a Pre-configured MG that is not always ON (activated) as determined from the signalling provided by the network, or if no such signalling is provided (i.e. autonomous rules are applied to determine the status of the Pre-configured MG), is not sufficient to perform PRS measurements.
* In the above scenario, the UE will inform the network that it is going to start/stop PRS measurements with the configured Pre-configured MG by initiating the existing LocationMeasurementIndication procedure.

In this meeting, some clarification on this issue was proposed.]

* Option 1(Huawei, Intel,): Remove initiation of LocationMeasurementIndication as a trigger event for rule based pre-MG activation/deactivation, and remove PRS measurement as a criterion to activate pre-MG.
* Option 2(Qualcomm, Nokia, Ericsson): When the network has provided a pre-configured gap and the UE notifies the network via LocationMeasurementIndication that it needs an always-ON gap to perform NR positioning measurements, the UE will determine that the pre-configured MG is always-ON only if the network updates the status of the pre-configured MG accordingly via RRC.

[No discusisons]

-----------------------------------------------------------------------------------------------------------------------

**[103-e][211] NR\_MG\_enh\_3, AI 9.10.1.3, 9.10.2.3 – Qiming Li**

**R4-2210283 Email discussion summary for [103-e][211] NR\_MG\_enh\_3**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210480 (from R4-2210283).**

**R4-2210480 Email discussion summary for [103-e][211] NR\_MG\_enh\_3**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210588 | WF on NCSG | Apple |  |
| R4-2210589 | LS on R17 measurement gap enhancement – NCSG | Apple |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2208299](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208299.zip) | R4-2211026 |  | MediaTek inc. | Revised | Depends on outcome of issue 1-1 |
| [R4-2208358](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208358.zip) | R4-2211027 |  | OPPO | Revised | Address comments from Nokia and MTK. Please remove deriveSSB-IndexFromCellInter-r17 related change in section 9.3.10.1, which can be covered by CR from CMCC. |
| [R4-2208460](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208460.zip) | R4-2211028 |  | Apple | Revised | Capture all agreements in clause 9.1.9.1 |
| [R4-2208529](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208529.zip) |  |  | CMCC | Return to | Pending issue 1-2. If option 2 in the 1st round summary is agreed, the CR can be endorsed without revision. |
| [R4-2209208](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209208.zip) | R4-2211029 |  | Huawei, Hisilicon | Revised | Address issues from E///, Nokia, QC and MTK. Please also remove the overlapped changes in 10168 and 08460. |
| [R4-2210168](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210168.zip) | R4-2211030 |  | Ericsson | Revised | Address issue from HW. Please also remove the overlapped changes in 08460 and 09208 (only capture changes in clause 9.1.9.2 and 9.1.9.3). |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210588 |  | WF on NCSG | Apple | Approved |  |
| R4-2210589 |  | LS on R17 measurement gap enhancement – NCSG | Apple | Approved |  |
| R4-2211026 |  | Maintenance CR on TS38.133 for L1 impact due toNCSG | MediaTek inc. | Postponed |  |
| R4-2211027 |  | CR to maintain measurements with NCSG in TS 38.133 | OPPO | Agreed |  |
| R4-2211028 |  | draftCR on NCSG core maintenance | Apple | Endorsed |  |
| [R4-2208529](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208529.zip) |  | CR on inter-frequency measurement with NCSG | CMCC | Agreed |  |
| R4-2211029 |  | CR on maintenance of NCSG requirements | Huawei, Hisilicon | Agreed |  |
| R4-2211030 |  | Correction to NCSG requirements in TS 38.133 | Ericsson | Agreed |  |

**R4-2210588 WF on NCSG**

*Type: other For: Approval  
 Source: Apple*

**Decision: Approved.**

**R4-2210589 LS on R17 measurement gap enhancement – NCSG**

*Type: other For: Approval  
 Source: Apple*

**Decision: Approved.**

**GTW on May 09**

**Issue 1-2: impact on inter-frequency cell identification**

* Proposal 1: Tidentify\_inter\_without\_index should also apply when the new introduced *deriveSSB-IndexFromCell-inter* is enabled. (OPPO, CMCC, Ericsson)

**Discussion:**

Nokia: support proposal 1.

Apple: most companies support proposal 1. Our concern is that it is out of scope.

Mediatek: we share the similar view as Apple. We extend to UE not supporting NCSG. We need more time.

**Issue 2-1: functionalities to be tested**

1)    Impact on L1 measurement, e.g. RLM (Apple, Intel, MTK)

2)    Measurement with NCSG on deactivated SCC (Apple, CMCC, ZTE, HW, E///, MTK)

3)    Measurement with NCSG on dormant SCell (ZTE)

4)    Intra-frequency measurement with NCSG (Apple, Intel, CATT, CMCC , QC, MTK)

5)    Inter-frequency measurement with NCSG (Apple, Intel, CATT, CMCC, HW, QC, E///, MTK)

6)    Inter-RAT measurement with NCSG (Apple, CATT, CMCC, QC, E///, MTK, HW)

7)    Interruption on the serving cells (Apple, Intel, CATT, ZTE, HW, QC)

8)    Scheduling restriction when *deriveSSB-IndexFromCell-inter* is configured (CMCC, HW)

**Discussions:**

Ericsson: most of them are enssential test. We can first agree on the most enssential ones.

Qualcomm: agree with 4~7

Intel: for interruption, it can be combined with other four.

**Agreement: functionalities to be tested.**

* + 2) Measurement with NCSG on deactivated SCC
  + 4) Intra-frequency measurement with NCSG
  + 5) Inter-frequency measurement with NCSG
  + 6) Inter-RAT measurement with NCSG, which should be limited to FR1
  + 7) Interruption on the serving cells
  + FFS on the other test cases and whether the above four functionalities can be tested jointly or separatly

##### 9.10.1.1 Pre-configured MG pattern(s)

**R4-2208030 Open issues in core requirements for pre-configured measurement gaps**

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

**Decision: Noted.**

**R4-2208294 Discussion on remaining issues of pre-configured gap**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2208295 Maintenance CR on TS38.133 for pre-MG**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2306 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Merged.**

**R4-2208354 On pre-configured MG**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208355 CR to maintain pre-configured measurement gap in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2314 rev Cat: F (Rel-17)  
  
 Source: OPPO*

**Decision: Merged.**

**R4-2208459 draftCR on Pre-MG core maintenance**

*Type: draftCR For: (not specified)  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2211023 (from R4-2208459).**

**R4-2211023 draftCR on Pre-MG core maintenance**

*Type: draftCR For: (not specified)  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2208772 Views on pre-configured MG patterns**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2209203 Discussion on remaining issues for pre-configured MG**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209204 CR on pre-MG related requirements**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2358 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211024 (from R4-2209204).**

**R4-2211024 CR on pre-MG related requirements**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2358 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

**R4-2210167 Correction to Pre-MG requirements in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2398 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

The CR updates remaining requirements related to pre-configured measurement gap.

**Decision: Revised to R4-2211025 (from R4-2210167).**

**R4-2211025 Correction to Pre-MG requirements in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2398 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

The CR updates remaining requirements related to pre-configured measurement gap.

**Decision: Agreed.**

**R4-2210231 Discussion on requirements for Pre-configured MG patterns**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on remaining issues for pre-configured NR MG patterns

**Decision: Noted.**

##### 9.10.1.2 Multiple concurrent and independent MG patterns

**R4-2207756 On multiple concurrent and independent MG patterns**

*Type: discussion For: (not specified)  
 Source: Apple*

**Decision: Noted.**

**R4-2207757 draftCR on concurrent gaps**

*Type: draftCR For: (not specified)  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2211017 (from R4-2207757).**

**R4-2211017 draftCR on concurrent gaps**

*Type: draftCR For: (not specified)  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2208032 Open issues in core requirements for multiple concurrent measurement gaps**

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

**Decision: Noted.**

**R4-2208066 Discussion on concurrent measurement gaps in NR**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208104 Discussion on the remaining issues for concurrent MGs**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2208206 Discussion on the maintenance for multiple concurrent and independent MG patterns**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208273 Issues for multiple concurrent and independent MG pattern maintenance**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208296 Discussion on remaining issues of concurrent gaps**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2208297 Maintenance CR on TS38.133 for L1 impact due to concurrent MG**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2307 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2208356 On multiple concurrent and independent MG**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208357 CR to maintain concurrent measurement gap in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2315 rev Cat: F (Rel-17)  
  
 Source: OPPO*

**Decision: Revised to R4-2211018 (from R4-2208357).**

**R4-2211018 CR to maintain concurrent measurement gap in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2315 rev Cat: F (Rel-17)  
  
 Source: OPPO*

**Decision: Agreed.**

**R4-2208522 Discussion on multiple concurrent and independent MG patterns**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2208528 CR on concurrent measurement gaps**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2324 rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Revised to R4-2211019 (from R4-2208528).**

**R4-2211019 CR on concurrent measurement gaps**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2324 rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Agreed.**

**R4-2208592 Discussion on remaining aspects of concurrent measurement gaps**

*Type: discussion For: Agreement  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208593 CR for remaining aspects of concurrent measurement gaps (section 8)**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2332 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2211020 (from R4-2208593).**

**R4-2211020 CR for remaining aspects of concurrent measurement gaps (section 8)**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2332 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2208594 CR for remaining aspects of concurrent measurement gaps (section 9)**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2333 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2211021 (from R4-2208594).**

**R4-2211021 CR for remaining aspects of concurrent measurement gaps (section 9)**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2333 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2208773 Views on multiple concurrent and independent MGs**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208780 Reply LS on coordination of R17 gap features**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2209205 Discussion on remaining issues for multiple concurrent MGs**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209206 CR on collision handling for concurrent MGs**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2359 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211022 (from R4-2209206).**

**R4-2211022 CR on collision handling for concurrent MGs**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2359 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

**R4-2209449 Discussion on Multiple concurrent MG patterns**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses concurrent gaps

**Decision: Noted.**

**R4-2209450 CR on concurrent gaps(9.1.8.2)**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2376 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR updates the measurement gap combinations for concurrent gaps

**Decision: Merged.**

##### 9.10.1.3 Network Controlled Small Gap

**R4-2208298 Discussion on remaining issues of NCSG**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2208299 Maintenance CR on TS38.133 for L1 impact due toNCSG**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2308 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2211026 (from R4-2208299).**

**R4-2211026 Maintenance CR on TS38.133 for L1 impact due toNCSG**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2308 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Postponed.**

**R4-2208358 CR to maintain measurements with NCSG in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2316 rev Cat: F (Rel-17)  
  
 Source: OPPO*

**Decision: Revised to R4-2211027 (from R4-2208358).**

**R4-2211027 CR to maintain measurements with NCSG in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2316 rev Cat: F (Rel-17)  
  
 Source: OPPO*

**Decision: Agreed.**

**R4-2208460 draftCR on NCSG core maintenance**

*Type: draftCR For: (not specified)  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2211028 (from R4-2208460).**

**R4-2211028 draftCR on NCSG core maintenance**

*Type: draftCR For: (not specified)  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2208529 CR on inter-frequency measurement with NCSG**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2325 rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Agreed.**

**R4-2208774 Views on remaining issues of NCSG**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2209207 Discussion on remaining issues for NCSG**

*Type: LS out For: Approval  
 to RAN2  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209208 CR on maintenance of NCSG requirements**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2360 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211029 (from R4-2209208).**

**R4-2211029 CR on maintenance of NCSG requirements**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2360 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

**R4-2210168 Correction to NCSG requirements in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2399 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

The CR updates remaining requirements related to NCSG.

**Decision: Revised to R4-2211030 (from R4-2210168).**

**R4-2211030 Correction to NCSG requirements in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2399 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

The CR updates remaining requirements related to NCSG.

**Decision: Agreed.**

#### 9.10.2 RRM performance requirements

##### 9.10.2.1 Pre-configured MG pattern(s)

**R4-2207755 On Pre-MG performance**

*Type: discussion For: (not specified)  
 Source: Apple*

**Decision: Noted.**

**R4-2208031 On performance requirements for pre-configured measurement gaps**

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

**Decision: Noted.**

**R4-2208067 Discussion on NR Pre-configured MG test cases configuration and list**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208207 Test cases for pre-configured MG pattern**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208300 Discussion on test case scope for pre-configured gap**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2208524 Discussion on test cases for pre-configured MG pattern(s)**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2208779 Discussion on pre-configued MG performance requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2209209 Discussion on test cases for pre-MG**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2210169 RRM test case scenarios for Pre-configured measurement gaps**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This document discusses RRM tests for NCSG

**Decision: Noted.**

##### 9.10.2.2 Multiple concurrent and independent MG patterns

**R4-2207758 On multiple concurrent and independent MG patterns performance**

*Type: discussion For: (not specified)  
 Source: Apple*

**Decision: Noted.**

**R4-2208033 On performance requirements for multiple concurrent measurement gaps**

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

**Decision: Noted.**

**R4-2208068 Discussion on NR concurrent MG test cases configuration and list**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208208 Test cases for multiple concurrent and independent MG patterns**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208301 Discussion on test case scope for concurrent gaps**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2208521 Discussion on test cases for multiple concurrent and independent MG patterns**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2209210 Discussion on test cases for concurrent MGs**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209451 Test case for multiple concurrent MG patterns**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the test design for concurrent gaps

**Decision: Noted.**

##### 9.10.2.3 Network Controlled Small Gap

**R4-2207759 On network controlled small gap performance**

*Type: discussion For: (not specified)  
 Source: Apple*

**Decision: Noted.**

**R4-2208069 Discussion on NCSG test cases configuration and list**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208209 Test cases for NCSG**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208302 Discussion on test case scope for NCSG**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2208457 RRM performance requirements for NCSG**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Withdrawn.**

**R4-2208523 Discussion on test cases for Network Controlled Small Gap**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2208777 Discussion on NCSG performance requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2209211 Discussion on test cases for NCSG**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2210113 RRM performance requirements for NCSG**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2210170 RRM test case scenarios for NCSG**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This document discusses RRM tests for NCSG

**Decision: Noted.**

### 9.11 Further enhancement on NR demodulation performance

#### 9.11.1 General

#### 9.11.2 UE demodulation and CSI requirements

##### 9.11.2.1 MMSE-IRC receiver for inter-cell interference

###### 9.11.2.1.1 PDSCH requirements

###### 9.11.2.1.2 CQI requirements

##### 9.11.2.2 MMSE-IRC receiver for intra-cell inter-user interference

##### 9.11.2.3 CRS-IM receiver in scenarios with overlapping spectrum for LTE and NR

###### 9.11.2.3.1 General

###### 9.11.2.3.2 Test set-up

#### 9.11.3 BS demodulation requirements maintenance

##### 9.11.3.1 PUSCH demodulation requirements for FR1 256QAM

### 9.12 Solutions for NR to support non-terrestrial networks (NTN)

#### 9.12.1 General

#### 9.12.2 Coexistence aspects

#### 9.12.3 Satellite Access Node RF requirements

##### 9.12.3.1 TX requirements for radiated characteristics

##### 9.12.3.2 RX requirements for radiated characteristics

##### 9.12.3.3 Tx requirements for conducted characteristics

##### 9.12.3.4 Rx requirements for conducted characteristics

#### 9.12.4 Satellite Access Node RF conformance testing

##### 9.12.4.1 General and work plan

##### 9.12.4.2 Conductive conformance Testing

##### 9.12.4.3 Radiated conformance Testing

#### 9.12.5 UE RF requirements

##### 9.12.5.1 TX requirements

##### 9.12.5.2 RX requirements

#### 9.12.6 RRM core requirements

##### 9.12.6.1 General

##### 9.12.6.2 GNSS-related requirements

##### 9.12.6.3 Mobility requirements

##### 9.12.6.4 Timing requirements

##### 9.12.6.5 Measurement procedure requirements

#### 9.12.7 RRM performance requirements

#### 9.12.8 Demodulation requirements

##### 9.12.8.1 General

##### 9.12.8.2 Satellite Access Node demodulation requirements

###### 9.12.8.2.1 PUSCH requirements

###### 9.12.8.2.2 PUCCH requirements

###### 9.12.8.2.3 PRACH requirements

##### 9.12.8.3 UE demodulation requirements

###### 9.12.8.3.1 PDSCH requirements

### 9.13 UE Power Saving Enhancements for NR

#### 9.13.1 RRM core requirement maintenance

#### 9.13.2 RRM performance requirements

#### 9.13.3 Demodulation performance requirements

### 9.14 NR Sidelink enhancement

#### 9.14.1 UE RF requirement maintenance for NR SL enhancement

**[103-e][109] NRSL\_enh\_maintenance\_Part\_1, AI 9.14.1 –Su Hwan Lim**

**R4-2210245 Email discussion summary for [103-e][109] NRSL\_enh\_maintenance\_Part\_1**

*Type: other For: Information  
 Source: Moderator (Meta)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210445 (from R4-2210245).**

**R4-2210445 Email discussion summary for [103-e][109] NRSL\_enh\_maintenance\_Part\_1**

*Type: other For: Information  
 Source: Moderator (Meta)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207963 |  | TR38.785 v1.1.0 TR Update for SL enhancement in Rel-17 | LG Electronics Deutschland | Agreed |  |
| R4-2207964 |  | TR38.785 v1.2.0 TR Update for SL enhancement in Rel-17 | LG Electronics Deutschland | Return to |  |
| R4-2208184 | R4-2210726 | CR for TS 38.101-1, Correction on configured transmitted power for V2X\_Rel-16 | CATT | Revised |  |
| R4-2208185 | R4-2210727 | CR for TS 38.101-1, Correction on configured transmitted power for V2X\_Rel-17 | CATT | Revised |  |
| R4-2208186 |  | CR for TS 38.101-1, Correction on MOP requirements for inter-band V2X con-current operation\_Rel-16 | CATT | Not pursued |  |
| R4-2208187 |  | CR for TS 38.101-1, Correction on MOP requirements for inter-band V2X con-current operation\_Rel-17 | CATT | Not purused |  |
| R4-2208188 | R4-2210728 | CR for TS 38.101-3, Correction on MOP requirements for inter-band V2X con-current operation\_Rel-16 | CATT | Revised |  |
| R4-2208189 | R4-2210729 | CR for TS 38.101-3, Correction on MOP requirements for inter-band V2X con-current operation\_Rel-17 | CATT | Revised |  |
| R4-2208237 |  | Discussion on configured transmitted power for V2X | CATT | Noted |  |
| R4-2208613 |  | Discussion on configured transmitted power for SL | vivo | Noted |  |
| R4-2208614 |  | Draft CR for TS 38.101-1, Correction on configured transmitted power for SL (Rel-16) | vivo | Not pursued |  |
| R4-2208615 |  | Draft CR for TS 38.101-1, Correction on configured transmitted power for SL (Rel-17) | vivo | Not pursued |  |
| R4-2209403 |  | Draft CR on correction of Pemax in SL (R17) | OPPO | Not pursued |  |
| R4-2209517 |  | CR on Pemax definition R16 | Xiaomi | Not pursued |  |
| R4-2209518 |  | CR on Pemax definition R17 | Xiaomi | Not pursued |  |
| R4-2209747 |  | On Pemax for NR V2X | Huawei, HiSilicon | Noted |  |
| R4-2209748 |  | draft CR for TS 38.101-1: correct Pemax for NR V2X (R16 Cat-F) | Huawei, HiSilicon | Not pursued |  |
| R4-2209749 |  | draft CR for TS 38.101-1: correct Pemax for NR V2X (R17 Cat-A) | Huawei, HiSilicon | Widthrawn |  |
| R4-2209750 | R4-2210730 | CR to TS 38.307: SL requirements (R17) | Huawei, HiSilicon | Revised |  |
| R4-2209344  R4-2209345 (CAT-A) | R4-2210689 | Draft CR for 38.101-1 to maintenance NR V2X UE spec (R16) | Huawei | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207964 |  | TR38.785 v1.2.0 TR Update for SL enhancement in Rel-17 | LG Electronics Deutschland | Agreed |  |
| R4-2210726 |  | CR for TS 38.101-1, Correction on configured transmitted power for V2X\_Rel-16 | CATT | Not pursued |  |
| R4-2210727 |  | CR for TS 38.101-1, Correction on configured transmitted power for V2X\_Rel-17 | CATT | Not pursued |  |
| R4-2210728 |  | CR for TS 38.101-3, Correction on MOP requirements for inter-band V2X con-current operation\_Rel-16 | CATT | Agreed |  |
| R4-2210729 |  | CR for TS 38.101-3, Correction on MOP requirements for inter-band V2X con-current operation\_Rel-17 | CATT | Agreed |  |
| R4-2210730 |  | CR to TS 38.307: SL requirements (R17) | Huawei, HiSilicon | Agreed |  |
| R4-2210689  R4-2209345 (CAT-A) |  | Draft CR for 38.101-1 to maintenance NR V2X UE spec (R16) | Huawei | Endorsed |  |

**GTW on May-18**

**Issue 1-1-1: Apply PEMAX,c IE *sl-MaxTransPower* for single carrier**

* Proposals
  + Option 1: For single carrier NR V2X UE, RAN4 will apply the same IE *sl-MaxTransPower* based on RAN1/RAN2 reply LS
  + Option 2: Apply IE SL-TxPower to PEMAX,c
* Recommended WF
  + **The CATT CR will reflect the agreements. If RAN4 do not make consensus on that, then majority view will be considered to close this issue.**

Ericsson: it is not the same meaning as P\_EMax based on the feedback in LS. If we use the other IE, it will cause the broken. P\_Max is always the power for carrier. Now it seems companies want to change the meaning of P\_EMAX. LS is only for power of PSCCH and PSSCH rather than carrier power. The misunderstanding is the definition of P\_EMAX. We should not change the meaning of spec.

Meta: We already send the LS to RAN1 and RAN2 to clarify the meaning. They provided the view on P\_EMAX IE which is used for PSCCH and PSSCH. The consistency is aligned with other working group. We can further discuss the SSB P\_EMAX. We can consider to change the equation for SSB.

LGE: have similar understanding as Meta. We have received the LS from RAN1. I do not know why it should be issue at this moment.

CATT: Support Option 1. RAN4 has sent LS to Ran1 and RAN2. The common understanding has been made in different working groups. There is no misunderstanding.

Qualcomm: support Option 1. In Ran2 reply, the opinion has been given aligned with Option 1.

Huawei: we received LS from RAN1 and RAN2. The parameter is used for power control which is similar as for Uu. Support Option 1.

Ericsson: in the power control formula, this IE has been considered for PSSCH and PSCCH transmission. Now we take this parameter again setting it in P\_EMAX, which is used for PCMax. This IE has been considered twice.

Xiaomi: We can accept Option 1. Sidelink UE can be configured with many resource pools. There will be many parameters for different pools. How can we treat this situation?

Meta: I did not understand P\_EMAX is complicated and used twice. I do not understand the situation. We may need further discussion. SSB has no P\_EMAX. We can further discuss the situation. To Xiaomi, it may be possible situation. The network can solve this problem. The spec does not need to solve this corner case.

Huawei: to Ericsson, for SSB, RAN1 and RAN2 do not respond these parameters. For PSSCH and PSCCH, we can agree on the tentative agreement.

Ericsson: if SSB has no P\_EMAX, is there any issue for re-selection.

Xiaomi: we also proposed SL-TxPower. Ran1 said this is not proper IE.

Tentative agreement: For PSSCH and PSCCH on single carrier NR V2X UE, RAN4 will apply the same IE *sl-MaxTransPower* based on RAN1/RAN2 reply LS

**Issue 1-1-2: PEMAX,c** **IE parameters for S-SSB**

Based on CATT discussion paper (R4-2208237) and 1st round discussion, there are three alternative solutions as follows

* Proposals
  + Option 1: Based on CATT CR (R4-2208184), RAN4 remove PEMAX,*c* and update PCMAX\_L,f,c and PCMAX\_H,f,c for S-SSB transmission for single carrier V2X UE.
  + Option 2: For PEMAX,*c* IE of S-SSB transmission, RAN4 use PEMAX,*c* IE with *sl-MaxTransPower*. And send LS to RAN2 to update the indication of maximum transmission power with this IE for S-SSB.
  + Option 3: For PEMAX,*c* IE of S-SSB transmission, RAN4 use PEMAX,*c* IE with *sl-TxPower* as same LTE.
* Recommended WF
  + **This issue will further discuss the detail wording in CATT CR in 2nd round.**

Ericsson: if we remove P\_EMAX, we change the UE behaviour, which means for sidelink UE when approaching the cell it cannot decide anymore. This is new behaviour. RAN2 spec is not followed anymore.

Huawei: even if we do not have this parameter for SSB, we still have power upper bound and we still have power class.

**Issue 1-1-3: Changing terminology of Serving cell c**

* Proposals
  + Option 1: Based on CATT CR (R4-2208184), RAN4 remove serving cell terminology and use the frequency f of carrier c for single carrier V2X UE.
  + Option 2: Keep the serving cell in the configured Tx power since SL operation is allowed both licensed band and unlicensed band.
  + Option 3: RAN4 can remove serving cell and use carrier c as PCMAX\_L,c and PCMAX\_H,c in clause 6.2E.4.1
* Recommended WF
  + **This issue will further discuss the detail wording in CATT CR in 2nd round.**

Qualcomm: we support Option 3. We cannot understand why we make frequency f of carrier c being changed.

Meta: NR has used the terminology frequency carrier c. We prefer Option 1.

Agreement: Agree on Option 3 and further discuss about the frequency f of carrier c for single carrier V2X UE

**Issue 1-1-4: Associated power issue between w/ serving cell and w/o serving cell**

**The following options are provided in the sent LS (R4-2120047)**

* Proposals
  + Option 1: The parameter can be associated either with a serving cell or without a serving cell, and it can be configured separately with p-max for Uu.
  + Option 2: The parameter can be associated either with a serving cell or without a serving cell, when the parameter is associated with a serving cell, PEMAX,c is the smaller value given by this parameter for SL and p-max for Uu of that serving cell.
  + Option 3: When UE is associated with a serving cell on the NR V2X carrier, p-max is used for serving cell c; when the UE is not associated with a serving cell on the NR V2X carrier, the parameter given for SL in RAN2 specification is used.

In Reply LS (R4-2206157/R4-2206158) from RAN WG1/WG2, they already shown that option 1 is their understanding for the associated serving cell power and RAN2 also gave a message there was no restriction of the PEMAX,c between Uu and SL.

Based on these reply LS, Moderator propose as follow

* Proposals
  + Option 1: Based on Xiaomi CR (R4-2209517), RAN4 need to define the restriction of PEMAX,c power relation between Uu and SL.
  + Option 2: Do not specify the restriction of PEMAX,c power relation between Uu and SL.
* Recommended WF
  + **RAN4 can decide one option with above two options based on the results of the question “what if the sidelink configured power is larger than the power of the cell limitation” If RAN4 do not make consensus on that, then majority view will be considered to close this issue.**

Discussion:

Xiaomi: for Serving cell c, we had question. Because for LTE the sidlink is not operating on licensed band, there is no case that sidelink is associated with serving cell. For NR we have NR band used for sidelink where the sidelink is associated with serving cell. We should consider the power is limited. If there is difference we should keep the minimum one.

Ericsson: We share the similar view as Xiaomi. When the Cell is associated the P-EMAX should be used and it is the legacy behavior. There is no need to change.

CATT: We support Option 2. Based on our understanding, sidelink and Uu operates in TDM and FDM. Given a time and a carrier, there is only on IE. We do not need consider there different IEs. The multiple IEs issue can be solved by network implementation.

Meta: we also share the similar as CATT. The power difference. There is no limitation for Uu and SL. The network can solve this problem.

Xiaomi: Based on the reply LS, we have different understanding. RAN1 LS indicates that two IEs will be configured differently. I agree with Ericsson.

Huawei: the LS to RAN1 we listed three options. Xiaomi’s option is in the list. RAN1 has clear response. We should align the understanding in different working groups.

Ericsson: we have the same interpretation. RAN1 LS says nothing the parameters is exchangeable. It just says they can be configured differently.

Qualcomm: we shared the same view as Meta and Huawei. If there is problem, network can solve it.

*Sub-topic description:* **Release independent issue for inter/intra-band con-current V2X UE**

**Issue 1-3-2: TS38.307 for release independent issues**

* Proposals
  + Option 1: The provided CR (R4-2209750, Huawei) can be agreeable to support release independent manner from Rel-16 for inter/intra-band con-current V2X operation.
  + Option 2: The inter-band con-current V2X operation will support from Rel-16, but the intra-band con-current V2X operation will support from Rel-17. The capability signalling of PC2/PC3 for intra-band con-current V2X operating band was defined in Rel-17.
* Recommended WF
  + TBD

Qualcomm: We agree to put statemetn to say the release indenepency is optional.

Huawei: the concurrent issue is from Rel-16. There is no signaling issue. But we are OK to compromise

Agreement: Agree on Option 1.

* Capture the statement that the release independency from early release is optional in the TR38.785.

**Draft CRs**

Agreement:

* the draft CR of Revision of R4-2209344 and R4-2209345 is agreeable.
* The draft CR of revision of R4-2208188 and R4-2208189 is agreeable
* The draft CR of revised R4-2209750 is agreeable

----------------------------------------------------------------------------------------------------------------------------

**R4-2207963 TR38.785 v1.1.0 TR Update for SL enhancement in Rel-17**

*Type: draft TR For: Agreement  
 38.785 v1.1.0 CR- rev Cat: (Rel-17)  
  
 Source: LG Electronics Deutschland*

**Abstract:**

Draft TR correcting errors in TR38.785 v1.0.0 based on the comment from MCC

**Decision: Agreed.**

**R4-2207964 TR38.785 v1.2.0 TR Update for SL enhancement in Rel-17**

*Type: draft TR For: Agreement  
 38.785 v1.2.0 CR- rev Cat: (Rel-17)  
  
 Source: LG Electronics Deutschland*

**Abstract:**

Draft TR 38.785 v1.2.0 to update agreed TP in RAN4#103e from TR38.785 v1.0.0

**Decision: Agreed.**

**R4-2208184 CR for TS 38.101-1, Correction on configured transmitted power for V2X\_Rel-16**

*Type: CR For: Agreement  
 38.101-1 v16.11.0 CR-1059 rev Cat: F (Rel-16)  
  
 Source: CATT*

**Decision: Revised to R4-2210726 (from R4-2208184).**

**R4-2210726 CR for TS 38.101-1, Correction on configured transmitted power for V2X\_Rel-16**

*Type: CR For: Agreement  
 38.101-1 v16.11.0 CR-1059 rev Cat: F (Rel-16)  
  
 Source: CATT*

**Decision: Not pursued.**

**R4-2208185 CR for TS 38.101-1, Correction on configured transmitted power for V2X\_Rel-17**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1060 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Revised to R4-2210727 (from R4-2208185).**

**R4-2210727 CR for TS 38.101-1, Correction on configured transmitted power for V2X\_Rel-17**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1060 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Not pursued.**

**R4-2208186 CR for TS 38.101-1, Correction on MOP requirements for inter-band V2X con-current operation\_Rel-16**

*Type: CR For: Agreement  
 38.101-1 v16.11.0 CR-1061 rev Cat: F (Rel-16)  
  
 Source: CATT*

**Decision: Not pursued.**

**R4-2208187 CR for TS 38.101-1, Correction on MOP requirements for inter-band V2X con-current operation\_Rel-17**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1062 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Not pursued.**

**R4-2208188 CR for TS 38.101-3, Correction on MOP requirements for inter-band V2X con-current operation\_Rel-16**

*Type: CR For: Agreement  
 38.101-3 v16.11.0 CR-0711 rev Cat: F (Rel-16)  
  
 Source: CATT*

**Decision: Revised to R4-2210728 (from R4-2208188).**

**R4-2210728 CR for TS 38.101-3, Correction on MOP requirements for inter-band V2X con-current operation\_Rel-16**

*Type: CR For: Agreement  
 38.101-3 v16.11.0 CR-0711 rev Cat: F (Rel-16)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2208189 CR for TS 38.101-3, Correction on MOP requirements for inter-band V2X con-current operation\_Rel-17**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0712 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Revised to R4-2210729 (from R4-2208189).**

**R4-2210729 CR for TS 38.101-3, Correction on MOP requirements for inter-band V2X con-current operation\_Rel-17**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0712 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2208237 Discussion on configured transmitted power for V2X**

*Type: discussion For: Approval  
 Source: CATT*

**Decision: Noted.**

**R4-2208613 Discussion on configured transmitted power for SL**

*Type: discussion For: Approval  
 Source: vivo*

**Decision: Noted.**

**R4-2208614 Draft CR for TS 38.101-1, Correction on configured transmitted power for SL (Rel-16)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: vivo*

**Decision: Not pursued.**

**R4-2208615 Draft CR for TS 38.101-1, Correction on configured transmitted power for SL (Rel-17)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: vivo*

**Decision: Not pursued.**

**R4-2209403 Draft CR on correction of Pemax in SL (R17)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: OPPO*

**Decision: Not pursued.**

**R4-2209516 on the remaining issue for Pemax**

*Type: discussion For: (not specified)  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2209517 CR on Pemax definition R16**

*Type: CR For: Agreement  
 38.101-1 v16.11.0 CR-1101 rev Cat: F (Rel-16)  
  
 Source: Xiaomi*

**Decision: Not pursued.**

**R4-2209518 CR on Pemax definition R17**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1102 rev Cat: A (Rel-17)  
  
 Source: Xiaomi*

**Decision: Not pursued.**

**R4-2209747 On Pemax for NR V2X**

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

**Decision: Noted.**

**R4-2209748 draft CR for TS 38.101-1: correct Pemax for NR V2X (R16 Cat-F)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Not pursued.**

**R4-2209749 draft CR for TS 38.101-1: correct Pemax for NR V2X (R17 Cat-A)**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2209750 CR to TS 38.307: SL requirements (R17)**

*Type: CR For: Agreement  
 38.307 v17.5.0 CR-0102 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210730 (from R4-2209750).**

**R4-2210730 CR to TS 38.307: SL requirements (R17)**

*Type: CR For: Agreement  
 38.307 v17.5.0 CR-0102 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

#### 9.14.2 Maintenance for Intra-band con-current operation between NR SUL and NR Uu

**[103-e][110] NRSL\_enh\_maintenance\_Part\_2, AI 9.14.2, 9.14.3 –Yuan Gao**

**R4-2210246 Email discussion summary for [103-e][110] NRSL\_enh\_maintenance\_Part\_2**

*Type: other For: Information  
 Source: Moderator (CATT)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210446 (from R4-2210246).**

**R4-2210446 Email discussion summary for [103-e][110] NRSL\_enh\_maintenance\_Part\_2**

*Type: other For: Information  
 Source: Moderator (CATT)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207630 | R4-2210731 | V2X RF switching issues | Qualcomm Incorporated | Revised |  |
| R4-2207631 | R4-2210732 | V2X intra-band con-current operation | Qualcomm Incorporated | Revised |  |
| R4-2208183 | R4-2210733 | Reply LS on new power class capability for NR-V2X | CATT | Revised |  |
| R4-2208616 |  | Discussion and reply LS on new power class capability for NR V2X | vivo | Noted |  |
| R4-2209515 |  | on the reply LS on new power class capability for NR-V2X | Xiaomi | Noted |  |
| R4-2209746 |  | CR for TS 38.101-1: correction for NR SL con-current operation requirements (R17) | Huawei, HiSilicon | Return to |  |
| R4-2209751 |  | CR to TS 38.101-1: update of NR-V2X MPR requirements (R17) | Huawei, HiSilicon | Agreed |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210731 |  | V2X RF switching issues | Qualcomm Incorporated | Approved |  |
| R4-2210732 |  | V2X intra-band con-current operation | Qualcomm Incorporated | Agreed |  |
| R4-2210733 |  | Reply LS on new power class capability for NR-V2X | CATT | Approved |  |
| R4-2209746 |  | CR for TS 38.101-1: correction for NR SL con-current operation requirements (R17) | Huawei, HiSilicon | Not pursued |  |

**GTW on May-18**

**Issue 1-2-1: Associated CR for 38.101-1 (R4-2207631, R4-2209746)**

* Proposals
  + Option 1: Add the RF requirements for intra-band con-current non-simultaneous Uu and SL operation that should follow their respective licensed band and V2X specifications (CR R4-2207631)
  + Option 2: Remove the Rx RF requirements for intra-band con-current operation (CR R4-2209746)
* Recommended WF
  + CR R4-2207631 to be revised and CR to be returned to. In 2nd round, further discuss option 1 based on the revised CR. For option 2, further check the feasibility of removing the Rx requirements for intra-band con-current operation.

Huawei: for the draft CR, we are not OK with changes on Rx part. There is no simultaneous reception of Uu and sidelink.

Qualcomm: we can remove section 7.xxx.

Meta: the Rx part is different. Two CC reception is not allowed for sidelink and Uu operation. It is correct understanding from Huawei. But we should mention two CC reception case. We propose to keep Rx part at it is.

LGE: We have the same understanding as Huawei for Rx part. Inter-band operation is in TDD mode only. Uu and SL RX cannot operate simultaneously.

Meta: Why do we need revision of CR?

LGE: if FDD band introduced, there would be other issues.

Agreement: agree on Option 2 and remove the section 7.X.X for receiver part from the draft CR of revised of R4-2207631.

* If the FDD band is introduced in the future, then the Rx requirement for con-current between Uu and SL will be discussed and added if agreeable.

----------------------------------------------------------------------------------------------------------------------------

**R4-2207630 V2X RF switching issues**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Discusses switching priority for V2X intra-band con-current operation, permissible operation modes and specifications for intra-band con-current operation

**Decision: Revised to R4-2210731 (from R4-2207630).**

**R4-2210731 V2X RF switching issues**

*Type: discussion For: Approval  
 38.101-1 v CR- rev Cat: (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Discusses switching priority for V2X intra-band con-current operation, permissible operation modes and specifications for intra-band con-current operation

**Decision: Approved.**

**R4-2207631 V2X intra-band con-current operation**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1048 rev Cat: F (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2210732 (from R4-2207631).**

**R4-2210732 V2X intra-band con-current operation**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1048 rev Cat: F (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2208183 Reply LS on new power class capability for NR-V2X**

*Type: LS out For: Approval  
 to RAN2  
 Source: CATT*

**Decision: Revised to R4-2210733 (from R4-2208183).**

**R4-2210733 Reply LS on new power class capability for NR-V2X**

*Type: LS out For: Approval  
 to RAN2  
 Source: CATT*

**Decision: Approved.**

**R4-2208616 Discussion and reply LS on new power class capability for NR V2X**

*Type: discussion For: Approval  
 Source: vivo*

**Decision: Noted.**

**R4-2209418 R17 UE power class in SL intra-band concurrent operation**

*Type: discussion For: Approval  
 Source: OPPO*

**Decision: Noted.**

**R4-2209515 on the reply LS on new power class capability for NR-V2X**

*Type: discussion For: (not specified)  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2209746 CR for TS 38.101-1: correction for NR SL con-current operation requirements (R17)**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1109 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Not pursued.**

#### 9.14.3 Maintenance for High power UE(PC2) for SL

**R4-2209751 CR to TS 38.101-1: update of NR-V2X MPR requirements (R17)**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1110 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2210190 Reply LS on Signaling of PC2 V2X intra-band concurrent operation**

*Type: discussion For: Approval  
 38.101-2 v CR- rev Cat: (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

#### 9.14.4 RRM core requirement maintenance

#### 9.14.5 RRM performance requirements

#### 9.14.6 Demodulation performance requirements

### 9.15 Extending current NR operation to 71GHz

#### 9.15.1 General

**[103-e][131] NR\_ext\_to\_71GHz\_Part\_1, AI 9.15.1, 9.15.2 – Aida L Vera Lopez**

**R4-2210266 Email discussion summary for [103-e][131] NR\_ext\_to\_71GHz\_Part\_1**

*Type: other For: Information  
 Source: Moderator (Intel)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210463 (from R4-2210266).**

**R4-2210463 Email discussion summary for [103-e][131] NR\_ext\_to\_71GHz\_Part\_1**

*Type: other For: Information  
 Source: Moderator (Intel)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210577 | WF on system parameters for NR extension to 71GHz | Intel Corporation |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207780 |  | Remaining issues on system parameters for NR operation in 52.6GHz – 71GHz | Apple | Noted |  |
| R4-2208045 |  | UE features for NR ext. to 71GHz WI | Intel Corporation | Noted |  |
| R4-2208046 |  | Further views on channelization for FR2-2 | Intel Corporation | Noted |  |
| R4-2208047 |  | Draft CR to introduce the channel and sync rasters of band n263 (option 1) | Intel Corporation | Not pursued | Discussions will focus on Option 2 |
| R4-2208048 |  | Draft CR to introduce the channel and sync rasters of band n263 (option 1) | Intel Corporation | Not pursued | Discussions will focus on Option 2 |
| R4-2208143 | R4-2210785 | Draft reply LS on the minimum guard period between two SRS resources for antenna switching | CATT | Revised |  |
| R4-2208479 |  | System parameters for a NR band in the range 52.6GHz – 71GHz | Nokia, Nokia Shanghai Bell | Noted |  |
| R4-2208540 | R4-2210786 | Draft CR to TS 38.104: Addition of FR2-2definition in subclause 5.1, n263 in subclause 5.2 and transmission bandwidth information in subclause 5.3 | Ericsson | Revised |  |
| R4-2208541 | R4-2210787 | Draft CR to TS 38.104: Addition of support for band n264 for licensed operation within 66000 to 71000 MHz | Ericsson | Revised | Consider comments provided in [**Section** **1.3.2**](#_1.3.2_CRs/TPs_comments) and include content of draft CR R4-2209683 |
| R4-2208617 | R4-2210788 | Draft CR for TS 38.101-2: Introduction of system parameters for FR2-2 | vivo | Revised |  |
| R4-2208618 |  | Further discussion on channel raster and sync raster for NR extending to 71GHz | vivo | Noted |  |
| R4-2208649 |  | 60GHz channel and synchronization raster | LGE | Noted |  |
| R4-2208763 |  | Reply LS on the minimum guard period between two SRS resources for antenna switching | Huawei, HiSilicon | Noted |  |
| R4-2209139 |  | 52.6-71 GHz System Parameters | Ericsson | Noted |  |
| R4-2209509 |  | Further discussion and draft reply LS on minimum guard symbol of SRS | Xiaomi | Noted |  |
| R4-2209682 |  | Draft CR to TS 38.101-2: Channel arrangement and channel bandwidths for 66-71 GHz | Huawei, HiSilicon | Return to | No feedback received during 1st round  Discuss content in round 2 |
| R4-2209683 |  | Draft CR to TS 38.104: Channel arrangement and channel bandwidths for 66-71 GHz | Huawei, HiSilicon | Merged  into revision of draft CR R4-2208541 |  |
| R4-2209716 |  | UE features for NR in 52.6 GHz – 71 GHz | Nokia, Nokia Shanghai Bell | Noted |  |
| R4-2210080 |  | draft CR 38.101-3 on FR2-2 DC/CA with FR1 anchor | Ericsson | Postponed |  |
| R4-2210117 | R4-2210789 | Draft CR to introduce the channel and sync rasters of band n263 (option 2) | Intel Corporation | Revised |  |
| R4-2210118 | R4-2210790 | Draft CR to introduce the channel and sync rasters of band n263 (option 2) | Intel Corporation | Revised |  |
| R4-2210188 |  | 60GHz UE bandwidths | Qualcomm | Noted |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210577 |  | WF on system parameters for NR extension to 71GHz | Intel Corporation | Approved |  |
| R4-2210785 |  | Draft reply LS on the minimum guard period between two SRS resources for antenna switching | CATT | Noted |  |
| R4-2210786 |  | Draft CR to TS 38.104: Addition of FR2-2definition in subclause 5.1, n263 in subclause 5.2 and transmission bandwidth information in subclause 5.3 | Ericsson | Endorsed |  |
| R4-2210787 |  | Draft CR to TS 38.104: Addition of support for band n264 for licensed operation within 66000 to 71000 MHz | Ericsson | Endorsed |  |
| R4-2210788 |  | Draft CR for TS 38.101-2: Introduction of system parameters for FR2-2 | vivo | Endorsed |  |
| R4-2209682 |  | Draft CR to TS 38.101-2: Channel arrangement and channel bandwidths for 66-71 GHz | Huawei, HiSilicon | Not pursued |  |
| R4-2210789 |  | Draft CR to introduce the channel and sync rasters of band n263 (option 2) | Intel Corporation | Merged |  |
| R4-2210790 |  | Draft CR to introduce the channel and sync rasters of band n263 (option 2) | Intel Corporation | Endorsed |  |

**R4-2210577 WF on system parameters for NR extension to 71GHz**

*Type: other For: Approval  
 Source: Intel*

**Decision: Approved.**

**GTW on May -20**

Agreement: Use the following table to define the Channel raster and sync raster for n263.

Table 5.4.2.3-1: Applicable NR-ARFCN per operating band

|  |  |  |
| --- | --- | --- |
| Operating Band | ΔFRaster  (kHz) | Uplink and Downlink  Range of NREF  (First – <Step size> – Last) |
| n257 | 60 | 2054166 – <1> – 2104165 |
|  | 120 | 2054167 – <2> – 2104165 |
| n258 | 60 | 2016667 – <1> – 2070832 |
|  | 120 | 2016667 – <2> – 2070831 |
| n259 | 60 | 2270833 – <1> – 2337499 |
|  | 120 | 2270833 – <2> – 2337499 |
| n260 | 60 | 2229166 – <1> – 2279165 |
|  | 120 | 2229167 – <2> – 2279165 |
| n261 | 60 | 2070833 – <1> – 2084999 |
|  | 120 | 2070833 – <2> – 2084999 |
| n262 | 60 | 2399166 – <1> – 2415832 |
|  | 120 | 2399167 – <2> – 2415831 |
| n263 | 120 | See Table 5.4.2.3-2 |
| 480 |
| 960 |

Table 5.4.2.3-2: Applicable NR-ARFCN for operation in band n263

|  |  |
| --- | --- |
| Channel Bandwidth | Applicable NR-ARFCN |
| 100 MHz | 2564083 + 1680 \* N, N = 0:137 |
| 400 MHz | 2566603 + 6720 \* N, N = 0:33 |
| 800 MHz | 2569963 + 6720 \* N, N = 0:32 |
| 1600 MHz | 2576683 + 6720 \* N, N =0:30 |
| 2000 MHz | 2580043 + 6720 \* N, N=0:29,  2585083, 2655643, 2692603, 2764843 |

Table 5.4.3.3-1: Applicable SS raster entries per operating band

|  |  |  |  |
| --- | --- | --- | --- |
| NR Operating Band | SS Block SCS | SS Block pattern1 | Range of GSCN  (First – <Step size> – Last) |
| n257 | 120 kHz | Case D | 22388 - <1> - 22558 |
|  | 240 kHz | Case E | 22390 - <2> - 22556 |
| n258 | 120 kHz | Case D | 22257 - <1> - 22443 |
|  | 240 kHz | Case E | 22258 - <2> - 22442 |
| n259 | 120 kHz | Case D | 23140 – <1> – 23369 |
|  | 240 kHz | Case E | 23142 – <2> – 23368 |
| n260 | 120 kHz | Case D | 22995 - <1> - 23166 |
|  | 240 kHz | Case E | 22996 - <2> - 23164 |
| n261 | 120 kHz | Case D | 22446 - <1> - 22492 |
|  | 240 kHz | Case E | 22446 - <2> - 22490 |
| n262 | 120 kHz | Case D | 23586 – <1> – 23641 |
|  | 240 kHz | Case E | 23588 – <2> – 23640 |
| n263 | 120 kHz | Case D | Table 5.4.3.3-2 |
| 480 kHz | Case F |
| 960 kHz2 | Case G | 24162 – <6> – 24954 |
| NOTE 1: SS Block pattern is defined in clause 4.1 in TS 38.213 [10].  NOTE 2: SS Block SCS of 960 kHz is not used for initial access. | | | |

Table 5.4.3.3-2: Allowed GSCN for operation in band n263 for 120 kHz and 480 kHz

|  |  |
| --- | --- |
| SS Block SCS | Range of GSCN |
| 120 kHz | 24156 + 6 \* N – 3 \* floor((N+5)/18), N=0:137 |
| 480 kHz | 24162 + 24 \* N – 12 \* floor((N+4)/18), N=0:33 |

Agreement: RAN4 aims to complete the common RF requirements for intra-band downlink contiguous CA in the maintenance part, and introduce the downlink intra-band contiguous CA of CA\_n263 in a release independement manner after the common RF requirement is finalized.

**GTW on May-10**

**Sub-topic 2-1: Channelization**

**Issue 2-1a: Channelization for unlicensed operation**

* Channel raster proposals
  + Proposal 1: Channel Raster Option 1 (Intel, R4-2208046)
    - for 100 MHz channel bandwidth, NREF = {2564083 + 1680\*N, N = 0:137}
    - for 400 MHz channel bandwidth, NREF = {2571643, 2578363, 2585083, 2591803, 2598523, 2606923, 2613643, 2620363, 2627083, 2633803, 2642203, 2648923, 2655643, 2662363, 2669083, 2679163, 2685883, 2692603, 2699323, 2706043, 2714443, 2721163, 2727883, 2734603, 2741323, 2751403, 2758123, 2764843, 2771563, 2778283, 2786683, 2600203, 2640523, 2647243, 2653963, 2660683, 2667403, 2674123}
    - for 800 MHz channel bandwidth, NREF = {2575003, 2588443, 2603563, 2617003, 2630443, 2645563, 2659003, 2672443, 2689243, 2702683, 2717803, 2731243, 2744683, 2761483, 2774923, 2788363, 2581723, 2595163, 2610283, 2623723, 2638843, 2652283, 2665723, 2682523, 2695963, 2711083, 2724523, 2737963, 2754763, 2768203, 2781643}
    - for 1600 MHz channel bandwidth, NREF = {2581723, 2623723, 2652283, 2695963, 2724523, 2768203, 2610283, 2637163, 2664043, 2753083, 2781643}
    - for 2000 MHz channel bandwidth, NREF = {2585083, 2620363, 2655643, 2692603, 2727883, 2764843}
  + Proposal 2: Channel Raster Option 2 (Intel, R4-2208046)
    - for 100 MHz channel bandwidth, NREF = {2564083 + 1680\*N, N = 0:137}
    - for 400 MHz channel bandwidth, NREF = {2566603 + 6720\*N\*4, N = 0:33}
    - for 800 MHz channel bandwidth, NREF = {2569963 + 13440\*N, N = 0:16; 2569963 + 6720 + 13440\*M, M = 0: 15}
    - for 1600 MHz channel bandwidth, NREF = {2576683 + 6720\*M + 26880\*N, , M=0:2, N =0:7}
    - for 2000 MHz channel bandwidth, NREF = {2585083, 2620363, 2655643, 2692603, 2727883, 2764843}
  + Proposal 3: RF channel raster is fixed based on 100.8 MHz step size for 100 MHz ChBW and 50.4 MHz step size for wider channel bandwidths, network implementation will take care that SSB and coreset#0 fit within channel bandwidth. (Nokia, R4-2208479)
  + Proposal 4: Use the fixed RF channel raster with the step size of 6667 (400.02 MHz), 13334 (800.04 MHz), 26667 (1600.02 MHz), 33334 (2000.04 MHz) to derive the channel raster for 400, 800, 1600, 2000 MHz channel bandwidths for the unlicensed band in FR2-2. (vivo, R4-2208618)
  + Proposal 5: Floating channel raster, 960kHz step size (LGE, R4-2208649)
  + Proposal 6: Fixed channel raster step size of 100.8MHz for 100MHz CBW, raster steps for wider CBWs are multiples of 100.8MHz (LGE, R4-2208649)
  + Proposal 7: Ericsson, R4-2209139

|  |  |  |
| --- | --- | --- |
| NR *operating band* | ΔFRaster  (kHz) | Uplink and Downlink  range of NREF  (First – <Step size> – Last) |
| n263Note 1 | 120 | 2563333 <2> 2794999 |
| 480 | 2565835 <8> 2792499 |
| 960 | 2565835 <16> 2792491 |

**Discussions:**

Nokia: Last time we have baseline 100.8MHz. But we identify the issue. 100.8MHz is not to aggregation of BWs. At least for wider bandwidth, we need addition raster, which is 50.4MHz. It enables the CA between different CBWs. We are OK with proposal 3 and 5.

Intel: For NR-U, we have rough similar issue. We wonder if such consideration is needed. The gap would be much fixed. One thing is that at least for 100MHz, all the companies suggested 1680\*N for 100Mhz and 6720\*N for 400Mhz. We can start with the simple ones, i.e., 100 and 400.

Vivo: to Nokia, we agreed 100.8MHz as baseline last meeting. This is only considered for 100Mhz. Proposal 2 is a good baseline to define the channel raster. For proposal 2, are proposal 1 and 2 the same? Based on the equation of proposal 2, can we derive proposal 1. For unlicensed band, there is total 14GHz. 2000MHz there should be 7 channel raster. But there are only 6 for 2000MHz. Does Intel consider alignment with IEEE?

Apple: if companies think there is some issue, we can have further adjustment. To Nokia, we do not know if the aggregation with 100MHz is really corner case.

Ericsson: alignment with IEEE is not needed. Why should we consider that? We have agreement that channel raster design should consider enabling continuous CA. Proposal 1 does not provide and leads to wider gap. We would like to support #7 and #5 is also OK.

Intel: To Vivo, proposal 1 is not the same as proposal 2. Proposal 2 does include the additional entries. For 2000MHz, if looking at the channel, it can fit 7 channel. We thought 6 channels would be sufficient. To Ericsson, we do not agree that the channel alignment with IEEE should be precluded. In terms of providing CA, the difference is the gap. I think we are flexible how to define it. #5 is against the previous agreement.

LGE: we propose the approach not to waste any spectrum when aggregating 100MHz. For numbers of channel for 2000MHz, we think more than 6 entries are needed. The previous agreement allows some flexibility to support different combinations.

Nokia: on the need of CA, we have not ruled out the contiguous CA. only 100MHz is mandatory. All the initial access should be done via 100MHz. With simple addition to add the shift to the baseline, we can enable CA well. On the need of 6 vs 7 for wider bandwidth, the simple way to address it is possible to place anywhere 100.8 raster or 50.4 raster.

Ericsson: for unequal channel bandwidth, the gap on either edge will be unequal. The fixed step will lead the unequal internal gap. Option 2 is better. Option 7 can also allow it. We should consider the unequal channel bandwidth aggregation.

Intel: we discussed the contiguous and non-contiguous CA in RAN and made the agreement. Why should we discuss it?

Ericsson: the agreement is not to have non-contiguous CA. I do not see the issue to bring the proposal considering CA here.

Nokia: some entries are needed for adding for 400MHz.

Intel: should we have strict contiguous CA. It is not possible to have contiguous CA for NR-U.

Apple: Given the discussion, it is beneficial to discuss the contiguous and non-contiguous CA. With increasing channel bandwidth, we may modify the channel spacing. There is slightly large gap between CCs. But it should be considered as the contiguous CA.

Ericsson: Regarding contiguous CA, we define in terms of gap between CCs, which should be lower than a certain value. There is no gap in-between the channel bandwidth in MHz. We are using the gap in-between. It is not possible to use the fixed raster to ensure no gap. We can design the raster to ensure no gap.

Apple: to Ericsson, when we define the normal spacing for CA, we did have floating raster points. Now we are going to define the fixed. Should we stick to channel normal spacing? Should we stick to fixed channel raster and design the channel spacing. We should not stick to channel normal spacing which is based on floating raster.

Ericsson: in order to have equal internal gap, we need floating raster.

Nokia: we are OK with fixed raster on the condition that 400Mhz is mandatory.

Ericsson: we can consider N\*channel spacing. It is consistent with unlicensed band as well. N\*20MHz, which allows us to have contiguous CA. There are case when gap in-between CC is too large.

**Agreement**

* Channel Raster Option 2 (Intel, R4-2208046)
  + for 100 MHz channel bandwidth, NREF = {2564083 + 1680\*N, N = 0:137}
  + for 400 MHz channel bandwidth, NREF = {2566603 + 6720\*N, N = 0:33}
* Further discuss the channel raster for wider channel bandwidth, i.e. 800MHz, 1600MHz, 2000MHz
* Sync raster proposals
  + Proposal 1: Sync Raster Option 1 (Intel, R4-2208046)
    - For 120 kHz PCell and PScell, GSCN = {24157 + 6\*N – floor((N-2)/6) - 1, N=0:137}
    - For 480 kHz PCell and PScell, GSCN = {24180, 24203, 24227, 24250, 24273, 24279, 24303, 24326, 24349, 24373, 24396, 24402, 24419, 24425, 24443, 24448, 24466, 24472, 24489, 24495, 24513, 24518, 24536, 24553, 24577, 24600, 24623, 24647, 24653, 24676, 24699, 24723, 24746, 24769, 24804, 24828, 24851, 24874, 24898, 24927}
    - For 960 kHz, no applicable SS raster entries exist for PCell and PScell
  + Proposal 2: Sync Raster Option 2 (Intel, R4-2208046)
    - For 120 kHz PCell and PScell, GSCN = {24156 + 6\*N – 3\*floor((N+4)/18), N=0:137}
    - For 480 kHz PCell and PScell, GSCN = {24162 + 24\*N – 12\*floor((N+4)/18), N = 0:33}
    - For 960 kHz, no applicable SS raster entries exist for PCell and PScell
  + Proposal 3: Adopt synchronization raster points shown in Table 1 of the Annex - (Nokia, R4-2208479)
  + Proposal 4: Use GSCN step size of 5 for 120kHz, 23 for 480 kHz, 23 for 960 kHz to derive the sync raster number for unlicensed band. (vivo, R4-2208618)
  + Proposal 5: LGE, R4-2208649
    - 120kHz SCS SSB raster fixed, one SSB per 100MHz (140 locations)
    - 480kHz SCS SSB raster fixed, two SSB per 400MHz (70 locations)
    - Alignment with 802.11 possible
  + Proposal 6: LGE, R4-2208649
    - 120kHz SCS SSB raster fixed, one SSB per 100.8MHz (138 locations)
    - 480kHz SCS SSB raster fixed, one SSB per 400MHz (54 locations)
    - Alignment with 802.11 possible
  + Proposal 7: Ericsson, R4-2209139

|  |  |  |  |
| --- | --- | --- | --- |
| NR *operating band* | SS Block SCS | SS Block pattern (note) | Range of GSCN  (First – <Step size> – Last) |
| n263Note 1 | 120 kHz | Case D | 24153 <1> 24960 |
| 480 kHz | Case F | 24157 <4> 24949 |
| 960 kHz | Case G | 24160 <8> 24952 |

* Recommended WF
  + Companies are encouraged to provide their views and preference, if any, on the proposals listed for general, channel raster and sync raster

**Discussions:**

Intel: Have one GSCN entry for each 100MHz.

**Agreement:**

* Have one GSCN entry corresponding to each channel with the smallest bandwidth for SCS.
* The total number is [138] entries for 120KHz SCS.
* Further discuss the GSCN for 480KHz and 960KHz SCS

**Issue 2-1b: Channelization for licensed operation**

* Options
  + Observation 1: Based on the newly agreed SU numbers, GSCN step sizes for different SSB SCSes are 3 for 120kHz, 15 for 480kHz, and 8 for 960kHz. (vivo, R4-2208618)
  + Proposal 1: Further check GSCN step size based on the agreed SU numbers for licensed bands. (vivo, 4-2208618)
* Recommended WF
  + Verify GSCN step size according to agreed SU numbers. Companies may share inputs on the above.

**Discussions:**

Nokia: For licensed operation, we have agreed on the CRs and sent to RAN1. It is not necessary at this time.

Ericsson: agree with Nokia. We do not know why SU is considered.

ZTE: Related to SSB

Intel: when the original, 90% is assumed. In last meeting, RAN4 agreed the updated SU. It does not mean the previous agreement does not work.

Ericsson: we do not change the agreement. Regarding SU we need discuss in the same way for licensed and unlicensed.

ZTE: we do not have proposal to further update.

**Sub-topic 2-2: Channel bandwidth**

**Issue 2-2: Mandatory channel bandwidth**

* Proposals
  + Option 1: The optionality of CBW is agreed as follows: (Apple R4-2207780, QCOM R4-2210188)
    - 120 kHz: mandatory (100 MHz), optional (400 MHz)
    - 480 kHz: mandatory (400 MHz), optional (800 MHz, 1600 MHz)
    - 960 kHz: mandatory (400 MHz), optional (800 MHz, 1600 MHz, 2000 MHz)
  + Option 2: As each SCS is optional to support, further optionality on maximum channel bandwidth support is not required. (Nokia R4-2209716, Intel R4-2208045)
  + Option 3: Other or potential compromise
* Recommended WF
  + Companies are encouraged to provide their views on the above options and which, if any, channel bandwidth per SCS should be optional/mandatory.

**Discussions:**

ZTE: UE vendors prefer to optionality for larger channel bandwidth. We propose mandate 400MHz for 120Khz and leave the other wider optional.

Nokia: We support ZTE proposal. Our compromise proposal is to mandate up to 800MHz channel bandwidth.

Apple: there are a number of challenges. For 480KHz and 960KHz, we have already compromised to mandate 400Mhz for 480KHz and 960KHz. We can compromise to accept mandating 400MHz for 120KHz SCS

Huawei: We are on the similar as Apple.

Mediatek: why should we include 400MHz mandatory?

Apple: to Mediatek, we also prefer option 1. But this is the last meeting. The current compromise would be best the group can get. The burden would be less demanding for UE to consider to support 480KHz and 960KHz SCS.

**Agreement:** Mandatory channel bandwidths

* 120 kHz: mandatory (100 MHz, 400 MHz)
* 480 kHz: mandatory (400 MHz), optional (800 MHz, 1600 MHz)
* 960 kHz: mandatory (400 MHz,), optional (800MHz, 1600 MHz, 2000 MHz)

**Sub-topic 3-1: NRB and SU allocation in FR2**

**Issue 3-1: FR2-2 SU allocation**

* Options
  + Proposal 1: It is proposed for FR2-2 to adopt SU allocation values given in Table 2.1-4. (Ericsson, R4-2208538/R4-2209139)

**Table 2.1-4: NRB and SU allocation FR2**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Frequency range | SCS  (kHz) | Transmission bandwidth  (MHz) | | | | | | |
|  |  | 50 | 100 | 200 | 400 | 800 | 1600 | 2000 |
| FR2-1 | 60 | 66 (95.0%) | 132 (95.0%) | 264 (95.0%) | N/A | N/A | N/A | N/A |
| 120 | 32 (92.2%) | 66 (95.0%) | 132 (95.0%) | 264 (95.0%) | N/A | N/A | N/A |
| FR2-2 | 120 | N/A | 62 (89.3%) | N/A | 248 (89.3%) | N/A | N/A | N/A |
| 480 | N/A | N/A | N/A | 61  (87.8%) | 120 (86.4%) | 238 (85.7%) | N/A |
| 960 | N/A | N/A | N/A | 30  (86.4%) | 60  (86.4%) | 119 (85.7%) | 148 (85.2%) |

* + Proposal 2: Confirm 156 RBs for 2GHz CBW with 960 kHz SCS. (Nokia R4-2209717, Qualcomm R4-2210166)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SCS (kHz) | 100 MHz | 400 MHz | 800 MHz | 1600 MHz | 2000 MHz |
| NRB | NRB | NRB | NRB | NRB |
| 120 | 66 | 264 | N/A | N/A | N/A |
| 480 | N/A | 66 | 132 | 264 | N/A |
| 960 | N/A | 33 | 66 | 132 | [156] |

* Recommended WF
  + Companies are encouraged to share their views on the two proposals for SU allocation

**Discussions:**

ZTE: we still prefer option 2. The proposal 1 will have impact on the analysis of BS RF spec. We do not see the further relaxation is needed for FR2-2.

Ericsson: we are proposing the proposal 1 with the smaller SU, because we should align SU between BS and UE. We do not understand why smaller SU will impact the MPR. We pay the price for larger SU for FR2-1. We are proposing the smaller SU for several entries. We also have larger channel bandwidth, which should be considered.

Nokia: The concern is the digital filtering. But based on our study, we do not see the benefit to have narrower allocation. Our preference is proposal 2.

Apple: we do not think this aspect has been considered last year. We look at the spectrum mask. Based on the spectrum mask, if the spectrum is lower… we have the reasonable requirement for UE to meet the mask. At least the current proposal 2 seems to ask for 95% SU, which is bit too high.

ZTE: to Ericsson, digital filer will be used for different bandwidth. When reduce the SU, the impact of digital filter should be evaluated again. To Apple, we have a dedicated email thread to discuss. Almost all the companies agreed to reuse the SU of FR2-1.

Ericsson: we agree with Apple comment. Our analysis below n 80% was provided last year to consider filter complexity and thermal noise.

**Agreement:** confirm the numbers for 100MHz and 400MHz for 120 SCS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SCS (kHz) | 100 MHz | 400 MHz | 800 MHz | 1600 MHz | 2000 MHz |
| NRB | NRB | NRB | NRB | NRB |
| 120 | 66 | 264 | N/A | N/A | N/A |
| 480 | N/A | 66 | 132 | 264 | N/A |
| 960 | N/A | 33 | 66 | 132 | [156] |

**GTW on May-18**

2.1 Channelization for unlicensed operation

*Open issue 1: channel raster for wider channel bandwidths (800MHz, 1600MHz, 2000MHz)*

* Option 1:
  + For 800 MHz: {2569963 + 6720\*N, N=0:32; 2575003, 2581723, 2588443, 2595163, 2645563, 2652283, 2659003, 2665723, 2682523, 2689243, 2695963, 2702683, 2754763, 2761483, 2768203, 2774923}
  + For 1600 MHz: {2576683 + 2\*6720\*N, N=0:15; 2581723, 2623723, 2652283, 2695963, 2724523, 2768203}
  + For 2000 MHz: {2580043, 2606923,2613643, 2640523, 2647243, 2674123, 2680843, 2707723, 2714443, 2741323, 2748043, 2774923; 2585083, 2620363, 2655643, 2692603, 2727883, 2764843}
* Option 2:
  + For 800 MHz: {2569963 + 6720\*N, N = 0:32}
  + For 1600 MHz: {2576683 + 6720\*N, N =0:30}
  + For 2000 MHz: {2580043 + 6720\*N, N=0:29; 2585083, 2655643, 2692603, 2764843}

Discussions:

LGE: Add some entries on the top of intel proposal. We are OK with Option 2.

Apple: OK with Option 2.

Agreement: Agree on Option 2.

*Open issue 2: sync raster applicable to Pcell and PScell (cells that support initial access as per WID)*

* Option 1:
  + For 120 kHz SCS: 24156 + 6\*N - 3\*floor((N+5)/18), N=0:137
  + For 480 kHz SCS: 24162 + N\*24 - 12\*floor((N+4)/18), N=0:33
* Option 2:
  + For 120 kHz SCS: 24157 + 6\*N - 3\*floor((N+11)/18), N=0:137
  + For 480 kHz SCS: 24163 + N\*24 - 12\*floor((N+6)/18), N=0:33

Discussion:

Nokia: we are OK with either Option 1 and Option 2. The 960KHz SCS and PCell and PSCell.

ZTE: whether sync raster falls into the guard band.

Intel: We check with both options. 85% percentile. Both options work well.

LGE: we are still running some check.

Agreement: [Agree on Option 1] and further check the value in this meeting.

*Open issue 3: sync raster for 120/480/960 kHz applicable to SCells, and 960kHz for PSCell and PCell*

* Option 1: step size <1> for all SCSs
* Option 2: step size <3>, <12>, and <6> for 120, 480, and 960 kHz, respectively

Discussion:

Mediatek: for the initial access there is no agreement. We do not need include 960Khz here.

Apple: we have the similar question. For PScell we need clarification. PCell supporting 96khz is out of scope.

Nokia: it is possible to handover to cell supporting 960khz, it is necessary to specify the sync raster for 960khz. Step size should be sub-set. We are fine to tighter raster for Scell operation.

Intel: As per WID, initial access with 960khz is not supported. We proposed to capture it as part of agreement.

Meidatek: for other frequency, we never specify the SSB not for initial access.

Intel: based on the draft CR, we are defining these two cases.

Tentative agreement:

* For sync raster applicable to non-initial access
  + Step size <3>, <12>, and <6> for 120, 480, and 960 kHz, respectively
* Clarify the sync raster of 960kHz is not for initial access and [the usage of the 960KHz sync raster for the PSCell is not precluded].
* As per WID, initial access with 960khz is not supported

3 Spectrum utilization

*Discussions during GTW session led to following agreement:*

**Agreement**: confirm the numbers for 100MHz and 400MHz for 120 SCS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SCS (kHz) | 100 MHz | 400 MHz | 800 MHz | 1600 MHz | 2000 MHz |
| NRB | NRB | NRB | NRB | NRB |
| 120 | 66 | 264 | N/A | N/A | N/A |
| 480 | N/A | 66 | 132 | 264 | N/A |
| 960 | N/A | 33 | 66 | 132 | [156] |

*Open issue: numbers for 400MHz, 800MHz, 1600MHz and 2000MHz for 480 and 960 kHz*

* Option 1: Confirm working assumption and 156 RBs for 2GHz CBW with 960 kHz SCS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SCS (kHz) | 100 MHz | 400 MHz | 800 MHz | 1600 MHz | 2000 MHz |
| NRB | NRB | NRB | NRB | NRB |
| 120 | 66 | 264 | N/A | N/A | N/A |
| 480 | N/A | 66 | 132 | 264 | N/A |
| 960 | N/A | 33 | 66 | 132 | [156] |

* Option 2: Confirm the values in green, and update table with values in yellow proposed for the larger SCS/BW combinations

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SCS (kHz)** | **100 MHz** | **400 MHz** | **800 MHz** | **1600 MHz** | **2000 MHz** |
|  | **NRB** | **NRB** | **NRB** | **NRB** | **NRB** |
| 120 | 66 | 264 | N/A | N/A | N/A |
| 480 | N/A | 61 | 120 | 238 | N/A |
| 960 | N/A | 30 | 60 | 119 | 148 |

* Option 3: Confirm GTW green values and discuss a lower value for 800MHz/1600MHz/2000MHz as a compromise to conclude the topic (somewhere in the middle of the working assumption and Option 2 above)

Apple: 90% is reasonable. For 2000MHz, we can go even slightly lower. 148 would be reasonable.

Nokia: for 2000Mhz 90% is OK for us.

Agreement: For spectrum utilization, in principle the around 90% SU is agreeable for 800MHz and 1600MHz

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SCS (kHz)** | **100 MHz** | **400 MHz** | **800 MHz** | **1600 MHz** | **2000 MHz** |
|  | **NRB** | **NRB** | **NRB** | **NRB** | **NRB** |
| 120 | 66 | 264 | N/A | N/A | N/A |
| 480 | N/A | 66 | [124] | [248] | N/A |
| 960 | N/A | 33 | [62] | [124] | 148 |

--------------------------------------------------------------------------------------------------------------------------------------

**R4-2208045 UE features for NR ext. to 71GHz WI**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208143 Draft reply LS on the minimum guard period between two SRS resources for antenna switching**

*Type: LS out For: Approval  
 to RAN1  
 Source: CATT*

**Decision: Revised to R4-2210785 (from R4-2208143).**

**R4-2210785 Draft reply LS on the minimum guard period between two SRS resources for antenna switching**

*Type: LS out For: Approval  
 to RAN1  
 Source: CATT*

**Decision: Noted.**

**R4-2208541 Draft CR to TS 38.104: Addition of support for band n264 for licensed operation within 66000 to 71000 MHz**

*Type: draftCR For: Endorsement  
 38.104 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

At last RAN4 meeting draft CR R4-2207457 and R4-2206582 was technically endorsed. In this draft CR we collect all aspects related to the introdcution of n264 (licensed band) defined between 66000 to 71000 MHz within FR2-2.

**Decision: Revised to R4-2210787 (from R4-2208541).**

**R4-2210787 Draft CR to TS 38.104: Addition of support for band n264 for licensed operation within 66000 to 71000 MHz**

*Type: draftCR For: Endorsement  
 38.104 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

At last RAN4 meeting draft CR R4-2207457 and R4-2206582 was technically endorsed. In this draft CR we collect all aspects related to the introdcution of n264 (licensed band) defined between 66000 to 71000 MHz within FR2-2.

**Decision: Endorsed.**

**R4-2208617 Draft CR for TS 38.101-2: Introduction of system parameters for FR2-2**

*Type: draftCR For: Approval  
 38.101-2 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

**Decision: Revised to R4-2210788 (from R4-2208617).**

**R4-2210788 Draft CR for TS 38.101-2: Introduction of system parameters for FR2-2**

*Type: draftCR For: Approval  
 38.101-2 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2208763 Draft reply LS on the minimum guard period between two SRS resources for antenna switching**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2209322 Multi-band relaxation requirement for band n263**

*Type: discussion For: Approval  
 38.101-2 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2209509 further discussion and draft reply LS on minimum guard symbol of SRS**

*Type: discussion For: (not specified)  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2209716 UE features for NR in 52.6 GHz - 71 GHz**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2210080 draft CR 38.101-3 on FR2-2 DC/CA with FR1 anchor**

*Type: draftCR For: Endorsement  
 38.101-3 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

draft CR 38.101-3 on FR2-2 DC/CA with FR1 anchor

**Decision: Postponed.**

#### 9.15.2 Operation bands and system parameters (channelization, raster, CBW, etc)

**R4-2207780 Remaining issues on system parameters for NR operation in 52.6GHz - 71GHz**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2208046 Further views on channelization for FR2-2**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208047 Draft CR to introduce the channel and sync rasters of band n263 (option 1)**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Not pursued.**

**R4-2208048 Draft CR to introduce the channel and sync rasters of band n263 (option 1)**

*Type: draftCR For: Endorsement  
 38.104 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Not pursued.**

**R4-2208479 System parameters for a NR band in the range 52.6GHz – 71GHz**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution discusses open issues related to systems parameters for a NR band in the range 52.6GHz – 71GHz

**Decision: Noted.**

**R4-2208540 Draft CR to TS 38.104: Addition of FR2-2definition in sucblause 5.1, n263 in subalcuse 5.2 and transmission bandwidth information in subclause 5.3**

*Type: draftCR For: Endorsement  
 38.104 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

At last RAN4 meeting all updates related to BS RF core requirements was collected in a big draft CR (R4-2207511). In this draft CR additional missing information related to band n263 is provided in clause 5. The n263 band definition is captured in subclau

**Decision: Revised to R4-2210786 (from R4-2208540).**

**R4-2210786 Draft CR to TS 38.104: Addition of FR2-2definition in sucblause 5.1, n263 in subalcuse 5.2 and transmission bandwidth information in subclause 5.3**

*Type: draftCR For: Endorsement  
 38.104 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

At last RAN4 meeting all updates related to BS RF core requirements was collected in a big draft CR (R4-2207511). In this draft CR additional missing information related to band n263 is provided in clause 5. The n263 band definition is captured in subclau

**Decision: Endorsed.**

**R4-2208618 Further discussion on channel raster and sync raster for NR extending to 71GHz**

*Type: discussion For: Approval  
 Source: vivo*

**Decision: Noted.**

**R4-2208649 60GHz channel and synchronization raster**

*Type: discussion For: Approval  
 Source: LG Electronics Finland*

**Abstract:**

Views and proposal for channel and synchronization raster for 57-71GHz frequency range.

**Decision: Noted.**

**R4-2209139 52.6-71 GHz System Parameters**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this contribution an example of a fixed channelization spanning 52.6-71 GHz and technical discussions on proposed spectrum utilization considering both licensed and unlicensed use.

**Decision: Noted.**

**R4-2209682 Draft CR to TS 38.101-2: Channel arrangement and channel bandwidths for 66-71 GHz**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In this Draft CR, the previously endorsed content in R4-2206607 is updated with agreement on the Initial Access restriction for the 960kHz SCS sync raster

**Decision: Not pursued.**

**R4-2209683 Draft CR to TS 38.104: Channel arrangement and channel bandwidths for 66-71 GHz**

*Type: draftCR For: Endorsement  
 38.104 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In this Draft CR, the previously endorsed content in R4-2206582 is updated with agreement on the Initial Access restriction for the 960kHz SCS sync raster

**Decision: Merged (with R4-2208541).**

**R4-2210117 Draft CR to introduce the channel and sync rasters of band n263 (option 2)**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Revised to R4-2210789 (from R4-2210117).**

**R4-2210789 Draft CR to introduce the channel and sync rasters of band n263 (option 2)**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Merged.**

**R4-2210118 Draft CR to introduce the channel and sync rasters of band n263 (option2)**

*Type: draftCR For: Endorsement  
 38.104 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Revised to R4-2210790 (from R4-2210118).**

**R4-2210790 Draft CR to introduce the channel and sync rasters of band n263 (option2)**

*Type: draftCR For: Endorsement  
 38.104 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Endorsed.**

**R4-2210188 60GHz UE bandwidths**

*Type: discussion For: Approval  
 38.101-2 v CR- rev Cat: (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

#### 9.15.3 UE RF requirements

**[103-e][132] NR\_ext\_to\_71GHz\_Part\_2, AI 9.15.3 – Phil Coan**

**R4-2210267 Email discussion summary for [103-e][132] NR\_ext\_to\_71GHz\_Part\_2**

*Type: other For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210464 (from R4-2210267).**

**R4-2210464 Email discussion summary for [103-e][132] NR\_ext\_to\_71GHz\_Part\_2**

*Type: other For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Netw Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210578 | WF on 60 GHz UE Requirements | Qualcomm Incorporated |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **T-doc number** |  | **title** | **Source** | **Status** | **Comments** |
| [R4-2207696](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207696.zip) |  | On remaining Tx issues for band n263 | Apple | Noted |  |
| [R4-2208049](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208049.zip) |  | UE Tx requirements for FR2-2 - remaining issues | Intel Corporation | Noted |  |
| [R4-2208619](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208619.zip) |  | Discussion on remaining Tx RF requirements for FR2-2 | vivo | Noted |  |
| [R4-2208647](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208647.zip) |  | Discussion on open specification items for Tx RF requirements | LG Electronics Finland | Noted |  |
| [R4-2208759](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208759.zip) |  | On n263 associated band specific Tx requirements | Huawei, HiSilicon | Noted |  |
| [R4-2209507](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209507.zip) |  | on the UE TX requirement | Xiaomi | Noted |  |
| [R4-2210166](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210166.zip) | R4-2210433 | 60 GHz UE TX | Qualcomm Incorporated | Revised to R4-2210433 and Noted |  |
| [R4-2208226](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208226.zip) |  | Discussion on FFT sizes for 52 6-71GHz | CATT | Noted |  |
| [R4-2208754](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208754.zip) |  | Upper limit on configured maximum power for 57-71 GHz | Ericsson | Noted |  |
| [R4-2209322](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209322.zip) |  | Multi-band relaxation requirement for band n263 | Apple | Noted |  |
| [R4-2209716](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209716.zip) |  | UE features for NR in 52.6 GHz - 71 GHz | Nokia, Nokia Shanghai Bell | Noted |  |
| [R4-2209717](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209717.zip) | R4-2210350 | On UE Tx RF aspects for FR2-2 | Nokia, Nokia Shanghai Bell | Revised to R4-2210350 and Noted |  |
| [R4-2207697](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207697.zip) | R4-2211196 | Draft CR to 38.101-2 on band n263 Tx aspects | Apple | Revised |  |
| [R4-2208760](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208760.zip) |  | Draft CR for n263 RF Tx requirements | Huawei, HiSilicon | Return to |  |
| [R4-2208781](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208781.zip) |  | draft CR on open specification for PC2 in FR2-2 | LG Electronics Finland | Return to |  |
| [R4-2209510](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209510.zip) |  | draftCR on the UE TX requirement for band n263 | Xiaomi | Return to |  |
| [R4-2208620](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208620.zip) |  | Discussion on remaining Rx RF requirements for FR2-2 | vivo | Noted |  |
| [R4-2208761](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208761.zip) |  | On n263 associated band specific Rx requirements | Huawei, HiSilicon | Noted |  |
| [R4-2209323](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209323.zip) |  | Rx requirement for band n263 | Apple | Noted |  |
| [R4-2209508](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209508.zip) |  | on the UE RX requirement | Xiaomi | Noted |  |
| [R4-2209718](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209718.zip) |  | On UE Rx RF aspects for FR2-2 | Nokia, Nokia Shanghai Bell | Noted |  |
| [R4-2208762](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208762.zip) |  | Draft CR for n263 RF Rx requirements | Huawei, HiSilicon | Return to |  |
| [R4-2209511](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209511.zip) | R4-2211161 | draftCR on the UE RX requirement for band n263 | Xiaomi | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **T-doc number** | **Revised to** | **title** | **Source** | **Status** | **Comments** |
| R4-2210578 |  | WF on 60 GHz UE Requirements | Qualcomm Incorporated | Approved |  |
| R4-2210433 |  | 60 GHz UE TX | Qualcomm Incorporated | Noted |  |
| R4-2210350 |  | On UE Tx RF aspects for FR2-2 | Nokia, Nokia Shanghai Bell | Noted |  |
| R4-2211196 |  | Draft CR to 38.101-2 on band n263 Tx aspects | Apple | Endorsed |  |
| [R4-2208760](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208760.zip) |  | Draft CR for n263 RF Tx requirements | Huawei, HiSilicon | Not pursued |  |
| [R4-2208781](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208781.zip) |  | draft CR on open specification for PC2 in FR2-2 | LG Electronics Finland | Merged |  |
| [R4-2209510](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209510.zip) |  | draftCR on the UE TX requirement for band n263 | Xiaomi | Merged |  |
| [R4-2208762](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208762.zip) |  | Draft CR for n263 RF Rx requirements | Huawei, HiSilicon | Not pursued |  |
| R4-2211161 |  | draftCR on the UE RX requirement for band n263 | Xiaomi | Endorsed |  |

**R4-2210578 WF on 60 GHz UE Requirements**

*Type: other For: Approval  
 Source: Qualcomm*

**Decision: Approved.**

**GTW on May-10**

**EVM**

Open issues and candidate options before e-meeting:

* Proposals
  + Proposal 1: Proposed SEM table 3 per -5/-13 method in 0166 section 10

**Table 6.5.2.1-1: General NR spectrum emission mask for frequency range 2.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Spectrum emission limit (dBm) / Channel bandwidth** | | | | | | | | |
| **ΔfOOB**  **(MHz)** | **50**  **MHz** | **100**  **MHz** | **200**  **MHz** | **400**  **MHz** | **800**  **MHz** | **1600**  **MHz** | **2000**  **MHz** | **Measurement bandwidth** |
| ± 0-5 | -5 | -5 | -5 | -5 | -5 | -5 | -5 | 1 MHz |
| ± 5-10 | -13 | -5 | -5 | -5 | -5 | -5 | -5 | 1 MHz |
| ± 10-20 | -13 | -13 | -5 | -5 | -5 | -5 | -5 | 1 MHz |
| ± 20-40 | -13 | -13 | -13 | -5 | -5 | -5 | -5 | 1 MHz |
| ± 40-80 | -13 | -13 | -13 | -13 | -5 | -5 | -5 | 1 MHz |
| ± 80-100 | -13 | -13 | -13 | -13 | -13 | -5 | -5 | 1 MHz |
| ± 100-160 |  | -13 | -13 | -13 | -13 | -5 | -5 | 1 MHz |
| ± 160-200 |  | -13 | -13 | -13 | -13 | -13 | -5 | 1 MHz |
| ± 200-400 |  |  | -13 | -13 | -13 | -13 | -13 | 1 MHz |
| ± 400-800 |  |  |  | -13 | -13 | -13 | -13 | 1 MHz |
| ± 800-1600 |  |  |  |  | -13 | -13 | -13 | 1 MHz |
| ± 1600-3200 |  |  |  |  |  | -13 | -13 | 1 MHz |
| ± 3200-4000 |  |  |  |  |  |  | -13 | 1 MHz |
| NOTE 1: Void | | | | | | | | |

**Discussions:**

Apple: during RAN4#101 there is a table agreed as starting point. People proposed to follow -5/-13 manner. What is the reason for the additional change?

Qualcomm: I believe Apple referred to initial table with -5 and -13. The breaking point was not correct in the previous table. This table follows the same methodology.

Nokia: looking at 100MHz, -13dB range should be extended.

Huawei: we have no concern on power level. Could we revisit the channel bandwidth? Considering SEM is with TRP requirement, the measurement time is long. Could we reduce the measurement time, e.g., by change measurement bandwidth to 10MHz and increasing power level by 10dB.

ZTE: whether to increase the measurement bandwidths reply on the regulation. I wonder if there is any regulation to allow 10MHz measurement.

**Agreement:** Agree on the following table for SEM.

**Table 6.5.2.1-1: General NR spectrum emission mask for frequency range 2.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Spectrum emission limit (dBm) / Channel bandwidth** | | | | | | | | |
| **ΔfOOB**  **(MHz)** | **50**  **MHz** | **100**  **MHz** | **200**  **MHz** | **400**  **MHz** | **800**  **MHz** | **1600**  **MHz** | **2000**  **MHz** | **Measurement bandwidth** |
| ± 0-5 | -5 | -5 | -5 | -5 | -5 | -5 | -5 | 1 MHz |
| ± 5-10 | -13 | -5 | -5 | -5 | -5 | -5 | -5 | 1 MHz |
| ± 10-20 | -13 | -13 | -5 | -5 | -5 | -5 | -5 | 1 MHz |
| ± 20-40 | -13 | -13 | -13 | -5 | -5 | -5 | -5 | 1 MHz |
| ± 40-80 | -13 | -13 | -13 | -13 | -5 | -5 | -5 | 1 MHz |
| ± 80-100 | -13 | -13 | -13 | -13 | -13 | -5 | -5 | 1 MHz |
| ± 100-160 |  | -13 | -13 | -13 | -13 | -5 | -5 | 1 MHz |
| ± 160-200 |  | -13 | -13 | -13 | -13 | -13 | -5 | 1 MHz |
| ± 200-400 |  |  | -13 | -13 | -13 | -13 | -13 | 1 MHz |
| ± 400-800 |  |  |  | -13 | -13 | -13 | -13 | 1 MHz |
| ± 800-1600 |  |  |  |  | -13 | -13 | -13 | 1 MHz |
| ± 1600-3200 |  |  |  |  |  | -13 | -13 | 1 MHz |
| ± 3200-4000 |  |  |  |  |  |  | -13 | 1 MHz |
| NOTE 1: Void | | | | | | | | |

**Spurious emissions**

* Proposals
  + Proposal 1: For n263 use 2x the CCBW as the spurious domain, as in FR2-1.

**Table 6.5.3-1: Boundary between NR out of band and spurious emission domain**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Channel bandwidth | 50  MHz | 100  MHz | 200  MHz | 400  MHz | 800  MHz | 1600  MHz | 2000  MHz |
| OOB boundary FOOB (MHz) | 100 | 200 | 400 | 800 | 1600 | 3200 | 4000 |

* + Proposal 2: For n263 spurious emissions use the same limits as FR2-1

**Table 6.5.3-2: Spurious emissions limits**

|  |  |  |
| --- | --- | --- |
| Frequency Range | Maximum Level | Measurement bandwidth |
| 30 MHz ≤ f < 1000 MHz | -36 dBm | 100 kHz |
| 1 GHz ≤ f < 12.75 GHz | -30 dBm | 1 MHz |
| 12.75 GHz ≤ f ≤ 2nd harmonic of the upper frequency edge of the UL operating band in GHz | -13 dBm | 1 MHz |

* Recommended WF
  + Agree both proposal 1 and proposal 2

**Agreement:** agree both proposal 1 and proposal 2.

**Spurious coexistence**

* Proposals
  + Option 1: Placeholder for spurious emission band UE co-existence requirements (Table 6.5.3.1-1)
  + Option 2: something else
* Recommended WF
  + Further discuss in round 1

**Discussions:**

Nokia: would it be acceptable to have the same level as for FR2-1, i.e., -2 and -5dB.

Qualcomm: we want to check it.

**Agreement:** Baseline is to reuse the same level as for FR2-1. Further checking is needed in this meeting.

**EVM**

* Proposals
  + Proposal 1: Use the FR2-1 EVM percentages for n263.



* + Proposal 2: Scale the minimum EVM power level from 400 MHz for noise BW. 3 dB for 800 MHz, 6 dB for 1600 MHz, 7 dB for 2000 MHz.
  + Proposal 3: RAN4 to further discuss how to capture PTRS processing in EVM requirement.
* Recommended WF
  + Agree Proposals 1,2 and 3.

**Discussions:**

Apple: We would like to share our view. The phase noise is too large. We need consider all the applicable gNB Tx and UE Rx impairment.

Qualcomm: to proposal 2, the proposal is to agree the scaling. We need to work on what the minimum levels are. We agree that phase noise is important for higher modulation orders.

Nokia: we agree that 64QAM is optional for UE.

**Agreement:**

* EVM requirement:
  + Pi/2 BPSK: 30%
  + QPSK: 17.5%
  + FFS for 16QAM and 64QAM
* Scale the minimum EVM power level from 400 MHz for noise BW
  + FFS on the values.
* FFS whether PTRS is configured or not

**Carrier leakage, image, and inband emissions**

* Proposals
  + Proposal 1: Define carrier leakage and I/Q image as shown in Table 2.6 for FR2-2 PC2 and PC3.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| FR2-2 PC3 | IQ Image | dB | -25 | Output power > 10 dBm |
|  |  | -20 | Output power ≤ 10 dBm |
| Carrier leakage | dBc | -25 | Output power > 0 dBm |
|  |  |  | -20 | -13 dBm ≤ Output power ≤ 0 dBm |
| FR2-2 PC2 | IQ Image | dB | -25 | Output power > 19 dBm |
|  | -20 | Output power ≤ 19 dBm |
| Carrier leakage | dBc | -25 | Output power > 9 dBm |
|  | -20 | -13 dBm ≤ Output power ≤ 9 dBm |

* + Proposal 2: Define carrier leakage and I/Q image **for CA** as shown in Table 2.6 for FR2-2 PC2 and PC3.
  + Proposal 3: Use values in table (R4-2210166) for PC1-PC3 relative carrier leakage requirement.
  + Proposal 4: Inband emissions proposal from ([**R4-2210166**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210166.zip)**)**
* Recommended WF
  + WF1: Agree on -25/-20 limits as in FR2-1 for PC1, PC2, and PC3
  + WF2: PC2 and PC3 Agree output power levels from proposal 1
  + WF3: PC1 further discuss output power levels for the -25 range and the -20 range

**Agreement:**

* Agree on -25/-20 limits as in FR2-1 for PC1, PC2, and PC3
* For PC2 and PC3, Agree output power levels from proposal 1
* For PC1 further discuss output power levels for the -25 range and the -20 range

**Power class upper limit and regions**

* Proposals
  + Option 1: To ensure all relevant regional limits are captured in the specifications, RAN4 should consider the following approaches: defining a dedicated power class or NS implementation. (Intel 8049)
  + Option 2: the upper limit of the power class for a UE form factor should not be determined by regulations of a particular region (like Europe) but be indicated by an NS value indicating the maximum output power applicable along with gain, directivity and unwanted emissions limits as required by local regulation.
* Recommended WF
  + TBA

**Discussions:**

Apple: We agree to introduce the NS value.

Intel: we are fine with this. Is the idea that it only applies to FR2-2?

Ericsson: yes. It includes the parameters in the region. We also have spurious emission. The NS indicates all the requirements applicable for FR2-2 bands.

Xiaomi: we agree with NS value. For option 2, during the discussion directivity should not be included.

Ericsson: Directivity is regional regulation. It applies when only the regulation is applicable.

Xiaomi: how the requirements can be included in 3GPP.

Ericsson: it may not be specified in 3GPP.

Intel: no performance requirements need be defined for regulation.

Apple: do you have the concrete the NS proposal.

Ericsson: 43 is for Europe.

Intel: what is the difference from FR2-1.

Ericsson: For FR2-1 we have the fixed upper limit. For the lower limit, the same applies for all the frequency ranges.

Xiaomi: we can keep the framework of power class and use NS to capture the additional requirements.

Ericsson: For FR2-2 power classes, the upper limit of power should be indicated by NS value.

**Agreement:**

* For the FR2-2 existing power classes, the upper limit of the power class for a UE form factor should be indicated by an NS value indicating the maximum output power applicable along with other requirements applicable in the local regulation
  + No additional performance verification is needed in 3GPP for the other requirements, which are not specified in 3GPP and applicable in the local regulation.

**TRP and Max EIRP**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PC1 | | PC2 | | PC3 | |
|  | Max TRP | Max EIRP | Max TRP | Max EIRP | Max TRP | Max EIRP |
| Proposal 1 | 27 | 43 | 27 | 43 | 27 | 43 |
| Proposal 2 | 25 | 55 | 25 | 40 | 25 | 40 |

**Discussions:**

Intel: we do not have discuss, since we agree on the previous NS value. The definitions of 43dBm and 40dBm are different. 40dBm is referred to max average EIRP.

Nokia: we need some values if no NS value.

**Agreement:** The regulation about TRP and maximum EIPR needs be captured by using NS value.

**MPR**

* Proposals related to method
  + Proposal 1: Use MPR delta due to excess BW method as described in LGE (8647 proposal 3)
* Proposals PC3 MPR for 100MHz and 400 MHz
  + Proposal 2: Re-use FR2-1 PC3 MPR for FR2-2
* Proposals PC3 MPR for 800, 1600, 2000 MHz
  + Proposal 3: Consider 3dB(Y1), 4dB(Y2) and 4dB(Y3) as MPR delta (in Table 2.3) respectively. For Edge RB allocations, in case of Pi/2 BPSK and QPSK in DFT-s-OFDM, consider 4dB, 5dB and 5dB respectively
* Proposals PC2
  + Proposal 4: Apply ~~CA~~ FR2-2 PC3 MPR to PC2
* Recommended WF
  + Further discuss in round 1

**Discussions:**

Nokia: we propose the MPR data recently. For PC3, we can use the same definition for FR2-1. We can reuse values for 100MHz and extend the 400 values for other channel bandwidths.

Qualcomm: we do agreement SU, EVM.. those limitation factors for MPR. We provide some initial evaluations. We need more discussion.

LGE: we take into account the bandwidth. The larger bandwidth leads to some complexity. We are surprised to see the lower MPR values from Qualcomm and Nokia. MPR is driven by EVM and in-band emission requirements. We should agree on them in a package.

**Configured transmitted power**

* Proposal 1: The Pumax tolerance of band n263 could reuse existing requirements for FR2-1 operating bands.

Table 6.2.4-1: PUMAX,f,c tolerance

|  |  |  |
| --- | --- | --- |
| Operating Band | ∆P (dB) | Tolerance T(∆P)  (dB) |
| n257, n258, n259, n260, n261, n262 | P = 0 | 0 |
|  | 0 < P ≤ 2 | 1.5 |
|  | 2 < P ≤ 3 | 2.0 |
|  | 3 < P ≤ 4 | 3.0 |
|  | 4 < P ≤ 5 | 4.0 |
|  | 5 < P ≤ 10 | 5.0 |
|  | 10 < P ≤ 15 | 7.0 |
|  | 15 < P ≤ X | 8.0 |
| NOTE: X is the value such that Pumax,f,c lower bound, PPowerclass - P – T(P) = minimum output power specified in clause 6.3.1 | | |

* Recommended WF
  + Further discuss in round 1

**Discussions:**

Ericsson: it means the actual MPR in the test would significantly increase. We should be aware of the implementation.

**GTW on May-10**

1.2.1 EVM

Discussion:

Qualcomm: after further checking, the image level is -28 for QPSK and 16QAM and -35 for 64QAM

Nokia: confusing. We do not see how these are linked together.

Apple: we share our concern of phase noise. More analysis is needed before agreeing on reusing FR2-1.

Nokia: how can the further analysis help?

Agreement: 16QAM and 64QAM EVM %age requirement the same as in FR2-1

* Configure PTRS for 16QAM and 64QAM EVM testing.

1.3.2 MPR

* Proposals related to method
  + Proposal 1: Use MPR delta due to excess BW method as described in LGE (8647 proposal 3)
* Proposals PC3 MPR for 100MHz and 400 MHz
  + Proposal 2: Re-use FR2-1 PC3 MPR for FR2-2
* Proposals PC3 MPR for 800, 1600, 2000 MHz
  + Proposal 3: Consider 3dB(Y1), 4dB(Y2) and 4dB(Y3) as MPR delta (in Table 2.3) respectively. For Edge RB allocations, in case of Pi/2 BPSK and QPSK in DFT-s-OFDM, consider 4dB, 5dB and 5dB respectively
* Proposals PC2
  + Proposal 4: Apply ~~CA~~ FR2-2 PC3 MPR to PC2

Discussion:

Qualcomm: we should get more analysis to see if the excess BW will restrict or not.

Nokia: if we do not have MPR requirements, we cannot complete the WI. We may see the less MPR in the future. Option 2 is our preference.

Apple: We have similar view as Qualcomm. Further analysis is needed.

LGE: Our proposal is not to try reusing the existing requirements and we should consider some complexity. SU is modified and we have uncertainty here. We would like to close this item as soon as possible.

Ericsson: the margin would be pretty large for performance testing in general. However, to achieve good coverage, the MPR is not preferred.

Nokia: we are not in favour in LGE proposal which need more justification.

Agreement: Further check the following bullets in this meeting

* For PC3 MPR for 100MHz and 400 MHz
  + Re-use FR2-1 PC3 MPR for FR2-2
* For PC3 MPR for 800, 1600, 2000 MHz
  + Use MPR delta due to excess BW method as described in LGE (8647 proposal 3)
    - FFS on the concrete values
* For PC2
  + Apply PC3 MPR to PC2

##### 9.15.3.1 TX requirements

**R4-2207696 On remaining Tx issues for band n263**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2207697 Draft CR to 38.101-2 on band n263 Tx aspects**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2211196 (from R4-2207697).**

**R4-2211196 Draft CR to 38.101-2 on band n263 Tx aspects**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2208049 UE Tx requirements for FR2-2 - remaining issues**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208226 Discussion on FFT sizes for 52 6-71GHz**

*Type: other For: Approval  
 Source: CATT*

**Decision: Noted.**

**R4-2208619 Discussion on remaining Tx RF requirements for FR2-2**

*Type: discussion For: Approval  
 Source: vivo*

**Decision: Noted.**

**R4-2208647 Discussion on open specification items for Tx RF requirements**

*Type: discussion For: Discussion  
 Source: LG Electronics Finland*

**Abstract:**

Views and ways forward on open specification items for Tx RF requirements in FR2-2.

**Decision: Noted.**

**R4-2208754 Upper limit on configured maximum power for 57-71 GHz**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this contribution we propose to use NS signaling to indicate the upper limit of the output power.

**Decision: Noted.**

**R4-2208759 On n263 associated band specific Tx requirements**

*Type: discussion For: Discussion  
 38.101-2 v CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2208760 Draft CR for n263 RF Tx requirements**

*Type: draftCR For: Discussion  
 38.101-2 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Not pursued.**

**R4-2208781 draft CR on open specification for PC2 in FR2-2**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: LG Electronics Finland*

**Abstract:**

Add open specification items for PC2 in FR2-2

**Decision: Merged (with R4-221xxxx).**

**R4-2209507 on the UE TX requirement**

*Type: discussion For: (not specified)  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2209510 draftCR on the UE TX requirement for band n263**

*Type: draftCR For: (not specified)  
 38.101-2 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Xiaomi*

**Decision: Merged (with R4-221xxxx).**

**R4-2209717 On UE Tx RF aspects for FR2-2**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2210350 (from R4-2209717).**

**R4-2210350 On UE Tx RF aspects for FR2-2**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2210166 60 GHz UE TX**

*Type: discussion For: Approval  
 38.101-2 v CR- rev Cat: (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Proposals for open items in UE TX

**Decision: Revised to R4-2210433 (from R4-2210166).**

**R4-2210433 60 GHz UE TX**

*Type: discussion For: Approval  
 38.101-2 v CR- rev Cat: (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Proposals for open items in UE TX

**Decision: Noted.**

##### 9.15.3.2 RX requirements

**R4-2208620 Discussion on remaining Rx RF requirements for FR2-2**

*Type: discussion For: Approval  
 Source: vivo*

**Decision: Noted.**

**R4-2208761 On n263 associated band specific Rx requirements**

*Type: discussion For: Discussion  
 38.101-2 v CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2208762 Draft CR for n263 RF Rx requirements**

*Type: draftCR For: Discussion  
 38.101-2 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Not pursued.**

**R4-2209323 Rx requirement for band n263**

*Type: discussion For: Approval  
 38.101-2 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2209508 on the UE RX requirement**

*Type: discussion For: (not specified)  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2209511 draftCR on the UE RX requirement for band n263**

*Type: draftCR For: (not specified)  
 38.101-2 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Xiaomi*

**Decision: Revised to R4-2211161 (from R4-2209511).**

**R4-2211161 draftCR on the UE RX requirement for band n263**

*Type: draftCR For: (not specified)  
 38.101-2 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Xiaomi*

**Decision: Endorsed.**

**R4-2209718 On UE Rx RF aspects for FR2-2**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

#### 9.15.4 BS RF requirements

##### 9.15.4.1 TX requirements

##### 9.15.4.2 RX requirements

#### 9.15.5 BS RF conformance testing

##### 9.15.5.1 General

##### 9.15.5.2 Transmitter characteristics

##### 9.15.5.3 Receiver characteristics

#### 9.15.6 Co-existence simulations

#### 9.15.7 FR1+FR2-2 DC/CA band combinations

#### 9.15.8 RRM core requirements

**[103-e][212] R17\_Maintenance, AI 9.15.8, 9.15.8.1, 9.15.8.2, 9.15.9 – Prashant Sharma**

**R4-2210284 Email discussion summary for [103-e][212] NR\_ext\_to\_71GHz\_RRM\_1**

*Type: other For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210481 (from R4-2210284).**

**R4-2210481 Email discussion summary for [103-e][212] NR\_ext\_to\_71GHz\_RRM\_1**

*Type: other For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210590 | WF on NR extension to 71 GHz RRM requirements (Part 1) | Qualcomm | WF to capture the agreements and open issues |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2208811 |  | Draft CR - Introduction of scheduling restriction requirements in FR2-2 | Vivo | Endorsed |  |
| R4-2209050 |  | Draft CR to TS 38.133 Corrections on scheduling availability in FR2-2 | Nokia | Endorsed |  |
| R4-2208812 |  | Draft CR – Introduction of deriveSSB-IndexFromCell tolerance requirements in FR2-2 | Vivo | Endorsed |  |
| R4-2209386 | R4-2211031 | Draft CR adding timing requirements for FR2-2 | Nokia | Revised |  |
| R4-2207782 | R4-2211032 | Draft CR on UE transmit timing for NR operation in 52.6GHz – 71GHz | Apple | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210590 |  | WF on NR extension to 71 GHz RRM requirements (Part 1) | Qualcomm | Approved | Capture the new agreements |
| R4-2211031 |  | Draft CR adding timing requirements for FR2-2 | Nokia | Endorsed |  |
| R4-2211032 |  | Draft CR on UE transmit timing for NR operation in 52.6GHz – 71GHz | Apple | Not pursued |  |
| R4-2210224 |  | FR2-2 RRM Performance Work Plan | Qualcomm | Approved | Treated in 2nd round |

**R4-2210590 WF on NR extension to 71 GHz RRM requirements (Part 1)**

*Type: other For: Approval  
 Source: Qualcomm*

**Decision: Approved.**

**GTW on May 9**

**Issue 1-1-1: Rx beam sweeping scaling factor**

* Proposal 1: Re-use the existing scaling factor from FR2-1 (ZTE, Nokia, Ericsson)
* Proposal 2: Define a new scaling factor:
  + Option 1: 12 (CATT, Apple)
  + Option 2: 16 (Huawei, LGE)
* Proposal 3: Define two scaling factors:
  + Option 1: 8 and 12 (CATT)
  + Option 2: 8 and 16 (LGE)
* Recommended WF
  + Discuss the proposals.
  + Note: Impact on RRM requirements would be further discussed in the second round if an agreement is reached on the scaling factor value.

**Discussion:**

Nokia: prefer proposal 1. There is no sufficient technical analysis to justrify proposal 3. We are confused about how proposal 3 can work.

Mediatek: prefer proposal 2 to avoid the complicated requirements. Disagree with two scaling factors.

Vivo: Agree with Mediatek and Nokia. Propsal 3 is not a good choice. If we have two scaling factor, then it means that we have two deployments. We are OK to have the new scaling factor.

Huawei: also support proposal 2. For the value, we support Option 2, i.e., 16. We do not support two scaling factors, since UE will have two sets of requirements. Number 8 is already a compromised value. The narrow beam will be used for FR2-2. We have no choice than more beam sweeping.

LGE: We support increasing scaling factor. 12 is fine for us. In RF, the assumption is finalized. FR2-2 UE will use larger number of narrow beam. RRM, SINR.. should be considered. We can consider new capabilities further.

CATT: our view is not to define two scaling factors. Proposal 1 and option 1 in proposal 2 are OK for us.

Qualcomm: prefer proposal 2. Proposal 3 does not make sense. FR2-2 is low mobility scenario. It should be fine to support larger measurement delay.

Ericsson: support proposal 1. We should keep the same measurement delay as FR2-1. In RF session, it will define the reference of 2x4 to check the spherical coverage but not direct evidence to increase the number for RRM.

ZTE: RF agreement does not mean that RRM measurement must be conducted using finer beam. I do not see the relationship between RF and RRM requirements. FR2-1 delay has already been extended. We support proposal 1.

Apple: We do think the scaling factor should be increasd because the number of antenna increases and beam number increases. The arugment is that because BS the SSB number in the SSB burst is not changed there is no need to increase the number. We should distinguish BS and UE. 8 FR2-1 applies to both coarse and finer beam. For FR2-2, currently the mobility requirement is very low, i.e., <3km/h. Lower mobility. We propose 12 as a compromise. We also open to 16.

Intel: Agree with Apple comment. This meeting is the last meeting. We would like to see the convergence. Agree with Apple that the mobility is low. We should consider the number between 8 and 16. 12 is compromised solution.

Nokia: We agree with Ericsson, ZTE. The scaling factor is topic since the first meeting. We did not see the analysis to justify. We have already extended for FR2-1. If we change the scaling factor, we cannot finalize the work. Many other aspects need be changed.

ZTE: 12 scaling factor is too large.

Nokia: prefer scaling factor 8 and put it in [].

Ericsson: we do not understand the difference between FR2-1 and FR2-2 in terms of mobility. SCell measurement delay would become longer and longer. We still keep 8.

Apple: Given that this is the last meeting, proposal 3 is not acceptable. We can consider option 1 and put 12 in []. If companies cannot agree on single value, we can consider the capability.

Vivo: the path loss of FR2-2 is larger than FR2-1. The finer beam needs be used to compenstate the larger path loss. IF we keep the same, we will have the smaller coverage, or we do not see too much impact on mobility.

Qualcomm: if considering capability, we prefer 16.

Apple: even with increasing number of antenna, there will still be decreasing coverage. We agree with Qualcomm modification on alternative 3.

**Agreement:**

* Futher discuss the two alternative values for scaling factor
  + Alternative 1: Define the new scaling factor of 12
  + Alternative 2: The scaling factor is 8
  + Alternative 3: If there is no agreement on alternative 1 or alternavie 2, then define the new UE capability and apply the scaling factor of 8 or [16] depending on UE capability

**Issue 2-2-1: MRTD definition – NR-DC**

* Proposal 1 (CATT): Change the definition of MRTD for synchronous NR DC in FR2-2 as below, so that it could be larger than 0.5 slot
  + For FR2-2 operation, a UE shall be capable of handling a relative receive timing difference between slot timing boundary of a cell belonging to MCG and slot timing boundary from the same slot index of a cell belonging to the SCG to be aggregated for NR DC operation. A UE shall be capable of handling a relative receive timing difference among the closest slot timing boundaries of different carriers to be aggregated in NR carrier aggregation
* Proposal 1a: Change the definition of MRTD for synchronous NR DC in FR2-2 as below, so that it could be larger than 0.5 slot
  + For FR2-2 operation, a UE shall be capable of handling a relative receive timing difference between slot timing boundary of a cell belonging to MCG and slot timing boundary from the same slot index of a cell belonging to the SCG to be aggregated for **synchronous** NR DC operation.
* Proposal 2 (Vivo): Update the definition of MRTD for inter-band NR DC for FR1 and FR2-2. The legacy definition ‘slot timing’ can be replaced with ‘subframe timing’
* Proposal 3 (Huawei): No need to modify the definition of MRTD for NR-DC. The MRTD for FR1 and FR2-2 can be defined as 33 us or min (33us, 0.5 slot).
* Recommended WF
  + Discuss the proposals

**Discussions:**

Nokia: Propsal 1a is aligned with the text of way forward in the last meeting.

Ericsson: proposal 2 is fine and it is simple one and we can got to subframe timing.

Vivo: share the similar view as Ericsson. If looking at three proposals, Proposal 1 means that we need tigher sync. Proposal 3, the half slot is always lower than 0.5 slot. It means it cannot distinguish the sync and async cases.

Huawei: it is right understanding that for proposal 3 there is no difference between sync and unsync. There is capability of SFN sync NR-DC for UE. For this Rel-16 capability there is agreement that it cannot be applied to furture release. The change of proposal 2 is only applied to CA case.

Apple: we share the same understanding in RAN4 to modify the current definition to apply to async case only. For async, we can use 0.5 slot. For sync case, we do not need to change the specification. The current proposal 2 is OK for us.

CATT: proposal 1a is clearer than proposal 1. Propoal 2 is also OK for us.

Intel: in Rel-17, it is supposed that all UE can support async NR-DC. It is right approach to go with proposal 3.

Nokia: for proposal 2, does it mean that we need change the definition for legacy as well or it is only applied FR2-2?

Vivo: it is only applied to FR2-2. We are open to discussion if we need change the legacy requirement.

Intel: Regarding to FR2-1, we do not need change the definition since there is no very large SCS. For FR2-2, it is very difficult for network to get sync deployment. We prefer to have the single assumption. For NR-CA we need consider proposal 2.

Huawei: to proposal 2, by changing slot to subframe, does it mean only for RRM or change the assumption?

**Agreement:** Down-selet to proposal 2 and proposal 3.

**Issue 1-3-1: Cell (PSS/SSS) detection**

* Proposal 1 (Qualcomm): RAN4 to relax the cell-detection delay requirements by a factor of 2 for 480kHz SCS and by a factor of 4 for 960kHz SCS to avoid increasing the HW and memory requirements.
* Recommended WF
  + Discuss the proposals.

**Discussions:**

Qualcomm: this is basically to handle UE complexation to performance correlations… UE needs more hardward and memory to perform all the correlation within the time. It makes sense for UE to use searching window to processing in distributed manner.

Mediatek: we support proposal 1. SCS is higher to do more beam searching in the given time. We would like to keep the memory and processing capability.

Ericsson: we understand the intention. We doubt the impact of the number, i.e., the limitation or restriction on the mobility. The total processing time is too large. We cannot accept 2 and 4. We can have 1.5 for 480KHz and 2 for 960KHz SCS.

Apple: it was not discussed before. It is a valid issue. RAN4 needs consider the relaxation. Regarding the exact number, we are open to further discussion.

Huawei: we understand the motivation. We have question about the distributed manner and how it can help.

Qualcomm: the distribution is to spare the measurement not to combine the measurement. It is for the single SSB not for the coherent SSBs.

Ericsson: we would like to apply the factor to smaller DRX cycles only.

Qualcomm: we also need it for longer DRX cycles.

**Agreement:** RAN4 to relax the cell-detection delay requirements by a factor and further discuss the number of the factor to avoid increasing the HW and memory requirements

* Option 1: a factor of 2 for 480kHz SCS and by a factor of 4 for 960kHz SCS
* Option 2: a factor of 1.5 for 480KHz and 2 for 960KHz SCS, and also apply the different factors depending on DRX cycles

**Issue 1-3-2: Inter-frequency SSB index identification time**

* Proposal 1 (Vivo): SSB index acquisition delay for inter-frequency measurement for FR2-2 should be extended by 1 sample compared with FR2-1 if using the channel model from RAN1, i.e., 6 samples is needed for SSB index acquisition delay for inter-frequency measurement for FR2-2.
  + MSSB\_index\_inter = 6 \*N in Table 9.3.4-4
  + N is Rx beam sweeping factor for FR2- 2
* Proposal 2 (Nokia): RAN4 to reuse the SSB index identification time from FR2-1.
* Recommended WF
  + Discuss the proposals.

**Discussions:**

Nokia: we prefer proposal 2. According to our simulation, it is OK to keep thet same.

Vivo: two options is just one sample difference. The proposal is based on our simulation results. We have very small CP length for 480 and 960KHz SCS. In some fading channel the delay may be beyond the CP length and thus we need one more sample.

Huawei: Proposal 1 is 6xN while proposal 2 is 5xN, right?

Intel: same question as Huawei. In Rel-15 it is compromised value for the FR2-1 for PC3. It is not 5. If we go with 5xN we do not need additional 1 sample.

Nokia: 24 samples. 5xN or 3xN. It is also part of discussion for the next issue.

Vivo: to Huawei and Intel, the requirement is based on compromise. One is 24 samples. The fundamental question is that one more sample is needed. We relax to give UE more change to get one more SSB.

Intel: the real proposal from VIVO is that we need one more sample.

**Discussion points:** Compared with FR2-1, the SSB index acquisition delay for inter-frequency measurement for FR2-2 should be extended to

* 4xN samples for power class 2 and 3
* 6xN for power class 1
* For above two bullets, N is the Rx beam sweeping factor and the value of N needs more discussion.

**Issue 1-3-3: Intra-frequency SSB index identification time when *deriveSSB-IndexFromCell* is not enabled**

* Proposal 1: When deriveSSB-IndexFromCell is not enabled, the requirements of SSB index detection for FR2-2 for intra-frequency measurement can be defined as below:
* **Time period for time index detection for intra-frequency measurements for FR2-2**

|  |  |  |
| --- | --- | --- |
| DRX cycle | Without measurement gaps | With measurement gaps |
| No DRX | Max(200ms, ceil(MSSB\_index\_intra × Kp) × SMTC period) × CSSFintra | Max(200ms, ceil(MSSB\_index\_intra × Kp) × Max(MGRP, SMTC period)) × CSSFintra |
| DRX cycle≤ 320ms | Max(200ms, ceil(1.5 × MSSB\_index\_intra s × Kp) × Max(SMTC period, DRX cycle)) × CSSFintra | Max(200ms, ceil(1.5 × MSSB\_index\_intra × Kp) × Max(MGRP, SMTC period, DRX cycle)) × CSSFintra |
| DRX cycle>320ms | ceil(MSSB\_index\_intra × Kp) × DRX cycle × CSSFintra | ceil(MSSB\_index\_intra × Kp) × DRX cycle × CSSFintra |

* + Option 1: MSSB\_index\_intra = 5\*N
  + Option 2: MSSB\_index\_intra = 6\*N
  + Option 3 (new): MSSB\_index\_intra = 3\*N
  + N is Rx beam sweeping factor for FR2-2.
* Recommended WF
  + Discuss the options.

**Agreement:** follow the conclusion for inter-frequency.

**Issue 2-1-1: UE transmit timing error**

* Proposal 1 (Huawei): For UL SCS of 120 kHz in FR2-2, a UE is required to meet the UL timing accuracy requirements if an SSB is available in the last 160 ms, and Te is proposed to be 2.7\*64\*Tc when SSB is 480 KHz and 2.5\*64\*Tc when SSB is 960 KHz
* Proposal 2 (Nokia): Determine Te UL accuracy for 120 kHz for different SSB SCS as:

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency Range | SCS of SSB signals (kHz) | SCS of uplink signals (kHz) | Te |
| 2-2 | 120 | 120 | 3.5\*64\*Tc |
|  | 480 | 120 | 2.86\*64\*Tc |
|  | 960 | 120 | 2.80\*64\*Tc |

* Proposal 3 (Apple): Te = 2.88\*64\*Tc for (480kHz, 120kHz) and Te = 2.82\*64\*Tc for (960kHz, 120kHz).
* Recommended WF
  + Discuss the proposals

**Agreement:** Agree on proposal 2.

**Issue 2-1-2: Gradual timing adjustment**

* Proposal 1 (Vivo): Considering the lower RF margin and the shorter timing adjustment period for FR2-2 for gradual timing adjustment requirements.
* Proposal 2 (Huawei): Define gradual timing adjustment in finer granularity with 100 ms, which will leads to total 12.8 ns timing drift, and take the TA adjustment accuracy as baseline for the RF margin.
* Proposal 3 (Nokia): Adopt Tq=Tp=0.8\*64\*Tc for the gradual timing adjustment parameters for 480 kHz and 960 kHz SCS in FR2-2
* Recommended WF
  + Discuss the proposals

**Disucssion:**

Vivo: we need more discussion. We do not consider RF margin. We need analyse Tp and Tq. If we consider RF margin, the values are very challenging. UE is allowed to adjust the timing with smaller value than Tq. We can have larger value for Tq.

Huawei: We would like to check with Nokia if the RF margin is included. Te requirement is very tight and that is the reason to consider relaxing Tq and Tp.

Apple: we do need consider the RF margin to decide the requirement. We agree with Vivo methodology. Regarding Huawei proposal to have finer granularity, we are not sure if it is the right way to go. We do not more discussion on the value.

Nokia: for the analysis, we try to calculate the time offset for different speeds. If we change the granularity, we can make further analysis in the group. Proposal 3 is consider granularity of 200us.

Qualcomm: we need more discussion. We have low RF margin now.

Intel: to Huawei, the number is very low. It considers very small RF margin.

Huawei: 12.8 ns does not consider RF margin.

**Agreement:** Consider the RF margin for gradual timing adjustment.

**Issue 2-1-3: UE timing advance adjustment accuracy**

* Proposal 1 (Apple): The UE timing advance adjustment accuracy for 480/960kHz SCS is defined as shown in the table below:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| UL Sub Carrier Spacing(kHz) | 15 | 30 | 60 | 120 | 480 | 960 |
| UE Timing Advance adjustment accuracy | ±256 Tc | ±256 Tc | ±128 Tc | ±32 Tc | [±12 Tc] | [±8 Tc] |

* Recommended WF
  + Discuss the proposal

**Discussion:**

Apple: when we made the potential agreement last meeting, Apple commented that Apple needs to check. We do have the strong view on this. We offer the compromise values.

Ericsson: In general we prefer the previous agreement. We basically break the uplink.

Nokia: prefer to keep the previous agreement.

**GTW on May-20**

**Sub-topic 1-1: Rx beam sweeping scaling factor**

Way forward: Discuss the two alternative values for scaling factor

* Option 1: Define the new scaling factor of 12
* Option 2: The scaling factor is 8
* Option 3: If there is no agreement on option 1 or option 2, then define the new UE capability and apply the scaling factor of 8 or [16] depending on UE capability

Ericsson: can we go with Option 3? Modify the value to 12.

Intel: we have seven and eight companies to support Option 1 and one company supports option 3. It will cause the fragment of UE implementation. This is very important requirement. We have strong view. We are not ready for capability. Can we go with 12?

Nokia: As pointed out in the summary, we have concern with Option 3. In reality we are thinking the worst case. 16 is too large. We prefer option 1. If Option 3 has 8 and 12, it is acceptable. We try to avoid the worst case.

Vivo: In general we share the similar view as Intel. Option 3 is not preferred. How can network take the advantages of the capability. With and without the capability, there would be no difference. Some UE can support 8. Maybe it can behaviour better in the certain scenario. But for FR2-2 it is with low mobility.

Huawei: network cannot tell how to use this capability. UE could choose different implementations to meet one of requirements, which will cause the problem. Keeping two capabilities is not benefit.

LGE: support Option 1. If Option 1 is not acceptable, we can go with Option 3.

Mediatek: we have concern on Option 3.

Apple: Our preference is Option 1. In case Option 1 is not agreeable, we are OK with Option 3.

Nokia: we brought some impact in our paper. We need capture the scenario to know which requirement we can work on.

**Agreement:** Define the new scaling factor of 12

**Issue 2-2-1: MRTD definition – NR-DC**

* Option 1: Update the definition of MRTD for inter-band NR DC for FR1 and FR2-2. The legacy definition ‘slot timing’ can be replaced with ‘subframe timing’
* Option 2: No need to modify the definition of MRTD for NR-DC. The MRTD for FR1 and FR2-2 can be defined as 33 us or min (33us, 0.5 slot).
* Option 3: Asynchronous NR-DC for FR1+FR2-2
* Recommended WF
  + Discuss the options.

Discussion:

Ericsson: We support option 1 but we want to discuss other options. We can add more option. There is option with sync between FR1 and FR2. Then everything is solved. It is very easy.

Huawei: Based on the comment, all the companies are fine with NR-DC for FR1+FR2-2, the TAE is same as the legacy requirement. The tricky part is how to capture it in the spec. In any case, NR-DC requirement can be met if going with Option 2. The NR-DC sync case has the same MRTD as async case.

Ericsson: To Huawei, on Option 2, we need feedback from UE industry. For Ericsson, sync NR-DC means two slots from each carrier has timing relationship. The timing relationship maintains. If Option 2 means the slot in FR1 carrier and slot in FR2-2 can glide freely without time relation. Then Option 2 is the same as Option 3 asynchronous. Ericsson can accept Option 3. If Option 2 is the same as Option 3, we can accept Option 2. Sync should be different async.

Huawei: we share the same view as Ericsson. We need aligne the definition for Option 2.

Nokia: We have conern. Our preference is Option 1. To Option 2, we already have clear majority for 2-2-5. The value should be 33us. If we go with Option 2, it will conflict the agreement for issue 2-2-5. For option 3, we only have synchronous. We do not feel comfortable. We would like to preclude sync from network. If going with this, we need more time to evaluate.

Qualcomm: we should not preclude any synchronous deployment. Option 2 and 3 preclude that.

Vivo: Option 1 would be best way to reflect synchronnous NR-DC supported. What does Option 3 mean? MRTD would be the same or different between sync and async.

Huawei: we are fine to reuse the value of 33us. But some companies have questioned the ambugity. If going with Option 1, do we agree to put some restriction on the network.

Intel: we can compromise to Option 1. There would be some legacy issue but we can discuss it later.

Apple: Option 1 is the best choise. Perhaps it is better to maintain the same reference point to both carriers. It works best if we can use the same MRTD definition for CA and DC. If UE can support async DC, then UE can support sync. Option 3 does not preclude sync deployment.

Ericsson: Option 1 is fine for ericsson. To further pretect legacy, we are fine with definition change. When we do CR, we limit the definition to FR2-2 explicitly. The existing definition works well for FR1 and FR2-1. NO need changes.

CATT: agree with Option 1. We share the same comments as Apple. We think unified defitiion is better.

Agreement: Update the definition of MRTD for inter-band NR DC for FR1 and FR2-2. The legacy definition ‘slot timing’ can be replaced with ‘subframe timing’

* Limit the updated definition to FR2-2 only and capture it in specification explicitly

**Issue 2-2-2: MRTD definition – NR-CA**

* Option 1: RAN4 to change the definition of receive timing difference between carriers in case of NR CA to address the case when MRTD is larger than one slot. For instance, RTD can be considered between the slot boundaries
* Option 2: Update the definition of MRTD for inter-band CA for FR1 and FR2-2. The legacy definition ‘slot timing’ can be replaced with ‘subframe timing’
* Option 3: Modify the definition of MRTD for FR1 and FR2-2 inter-band CA as the relative transmission timing difference among the closest frame timing boundaries excluding slot offset if configured.
* Recommended WF
  + Discuss the options

Discussions:

Huawei: if there is slot offset, how can we handle.

Qualcomm: network knows well.

Apple: for UE in the field, with or without slot offset, it does not impact UE receiver behaviour.

Vivo: MRTD requirements give some indication like some resource allocation and processing. It does not have to be realy slot boundary. It has no need be real slot boundary.

Nokia: we are fine with it in general.

Agreement: Update the definition of MRTD for inter-band CA for FR1 and FR2-2 without considering any slot offset. The legacy definition ‘slot timing’ can be replaced with ‘subframe timing’

* Limit the updated definition to FR2-2 only and capture it in specification explicitly

**Sub-topic 2-3: MTTD**

**Agreement:** for MTTD, resue the conclusion from MRTD as baseline.

---------------------------------------------------------------------------------------------------------------------------------

**[103-e][213] NR\_ext\_to\_71GHz\_RRM\_2, AI 9.15.8.3, 9.15.8.4, 9.15.8.5, 9.15.8.6 – Meng Zhang**

**R4-2210285 Email discussion summary for [103-e][213] NR\_ext\_to\_71GHz\_RRM\_2**

*Type: other For: Information  
 Source: Moderator (Intel)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210482 (from R4-2210285).**

**R4-2210482 Email discussion summary for [103-e][213] NR\_ext\_to\_71GHz\_RRM\_2**

*Type: other For: Information  
 Source: Moderator (Intel)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210591 | WF on LBT impacts on RRM requirements for FR2-2 | Intel Corporation |  |
| R4-2211171 | LS on signalling of CCA configurations of neighbour cells | Nokia |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2208057 | R4-2211033 | DraftCR for FR2-2 LBT support in RRC\_IDLE, RRC\_INACTIVE and RRC\_CONNECTED state mobility requirements | Intel Corporation | Revised |  |
| R4-2208949 | R4-2211034 | Draft CR on RLM and Link recovery procedures for unlicensed operation in FR2-2 | Huawei, HiSilicon | Revised |  |
| R4-2209051 | R4-2211035 | Draft CR to TS 38.133 Intra-frequency measurement requirements with CCA in FR2-2 | Nokia, Nokia Shanghai Bell | Revised |  |
| R4-2209094 | R4-2211036 | On inter\_frequency requriements with LBT | Ericsson | Revised |  |
| R4-2210232 | R4-2211180 | DraftCR for FR2-2 LBT support in L1-RSRP measurements for reporting | Qualcomm Incorporated | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210591 |  | WF on LBT impacts on RRM requirements for FR2-2 | Intel Corporation | Approved |  |
| R4-2211171 |  | LS on signalling of CCA configurations of neighbour cells | Nokia | Approved |  |
| R4-2211033 |  | DraftCR for FR2-2 LBT support in RRC\_IDLE, RRC\_INACTIVE and RRC\_CONNECTED state mobility requirements | Intel Corporation | Endorsed | Revise the number of Table 4.2A.2.2-1 in the next meeting if needed |
| R4-2211034 |  | Draft CR on RLM and Link recovery procedures for unlicensed operation in FR2-2 | Huawei, HiSilicon | Endorsed |  |
| R4-2211035 |  | Draft CR to TS 38.133 Intra-frequency measurement requirements with CCA in FR2-2 | Nokia, Nokia Shanghai Bell | Endorsed | Scaling factors need be updated in next meeting. |
| R4-2211036 |  | On inter\_frequency requriements with LBT | Ericsson | Revised | NRxBeam will be changed to N |
| R4-2211180 |  | DraftCR for FR2-2 LBT support in L1-RSRP measurements for reporting | Qualcomm Incorporated | R4-2210232 endorsed | R4-2211180 withdrawn  Please upload R4-2210232 |

**R4-2210591 WF on LBT impacts on RRM requirements for FR2-2**

*Type: other For: Approval  
 Source: Intel*

**Decision: Approved.**

**R4-2211171 LS on signalling of CCA configurations of neighbour cells**

*Type: LSout For: Approval  
 Source: Nokia*

**Decision: Approved.**

**GTW on May-09**

**Sub-topic 1-1 RLM and BFD evaluation periods**

Evaluation periods for RLM and BFD are missing from the endorsed draftCR in the last meeting.

**Issue 1-1-1: How to extend RLM OOS evaluation periods due to LBT failure?**

* Option 1: For operation with LBT, extend the RLM out-of-sync evaluation period by a fixed factor in FR2-2

|  |  |  |  |
| --- | --- | --- | --- |
|  | Option 1a (k=1) | Option 1b | Option 1c… |
| No DRX | 10+k | 12 |  |
| DRX<=320ms | 15+k | 1.5 \* 10 |  |
| DRX>320ms | 10+k | 8 |  |

* Option 2: Consider more dynamic evaluation period for RLM OOS as other RRM requirements compared with the fixed window defined in Rel-16 NR-U
  + Define the evaluated period of RLM and BFD as X +w\*L, where X is the number of SSBs needed in licensed band, w is the scheduling factor which could be larger than 1, and L is the number of unavailable SSBs within X.
  + It should be noted that L is different from that in other RRM requirements, where L is the number of SSBs which may be unavailable due to LBT failure or deep fading.
* Recommended WF
  + Discuss between option 1 and option 2

**Discussions:**

Mediatek: Support option 1. For option 2, because UE cannot differentiate the deep fading and not availabile of SSB, how can we extend according to dynamic L.

Intel: we can compromise to option 1.

Apple: the simple way forward is to follow the agreement for NR-U. Maybe the situation is different. But it can be handled in the requirement.

Huawei: to Mediatek, L here is not same definition as other requirement. It is not avaialability of SSB. The purpose is to avoid UE alsways keeping the large searching window and to avoid UE mistakenly triggering the OOS. But we can compromise with Option 1.

Qualcomm: agree with Apple.

Nokia: using 1b we would like to balance.

Apple: we prefer to reuse the agreement for NR-U by same number of extension for NR-U.

**Agreement:**

* For operation with LBT, extend the RLM out-of-sync evaluation period by a fixed factor in FR2-2
  + Further discuss Option 1b and Option 1c in the table below.

|  |  |  |
| --- | --- | --- |
|  | Option 1b | Option 1c |
| No DRX | 12 | Use the same number as NR-U |
| DRX<=320ms | 1.5 \* 10 |
| DRX>320ms | 8 |

**Issue 1-1-2: How to extend BFD OOS evaluation periods due to LBT failure?**

* Option 1: The same as those of RLM OOS.
* Recommended WF
  + Agree on option 1

**Agreement:** Option 1.

**Issue 1-1-3: Whether to have separate requirements between different side conditions SNR <-7dB or >= -7dB?**

* Option 1: The same requirements apply.
* Recommended WF
  + Agree on option 1

**Agreement:** Option 1.

**Issue 1-3-3: Whether a UE can assume LBT is always used when performing measurement in unlicensed band?**

* Option 1: Yes
* Recommended WF
  + Discuss upon option 1

Companies are encouraged to provide comments per sub-topic directly below the summary.

**Discussion:**

Huawei: we can agree with comments from Ericsson and Nokia. Even if it is mandatory, I am not sure if RAN1 discuss this issue or not.

Apple: I just wonder if there is specaill handling for 6GHz band. I do not remember that RAN4 have any additional requirement. We can just follow the agreement for NR-U. What does exact RAN4 need to decide?

Nokia: RAN1 colleagues said it was discussed in RAN1. Principly we do not see the reason and where the issue comes from.

Huawei: in Rel-16 NR-U, from RAN4 RRM perspective, we always assume LBT is performed. Even if we define the requirement for 71 GHz, UE has not idea whether to LBT is used for a carrier. What requirements should be followed?

Intel: we are not expecting the mixed deployment of lincesed and unlicensed.

ZTE: From channel arrangement discussion in main session, Ericsson mentioned in EU LBT is not mandated for 71GHz.

Apple: for NR-U, we have this requirements. My interpretation is that in the region where LBT is applied then the requirement is applied. For 71GHz FR2-2, we can simply follow the practice in NR-U.

Ericsson: Share the similar view with Intel and Apple. About mixture of LBT and non-LBT, we do not need use two approachs in the same region.

Huawei: for NR-U requirement the title implies that LBT is used for sure. It is possible for gNB to decide whether LBT is used or not. Maybe one cell sufferes from LBT failure while others do not. For the requriements defined for 71GHz, how can we tell whether UE has to meet the requirement when operationg the measurement on a certain frequency layer. The clarifcaiton can help.

Intel: We think it is not differnet between NR-U and 60GHz. How can UE tell LBT is used or not for NR-U.

##### 9.15.8.1 General

**R4-2207783 On Rx beam sweeping scaling factor**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2208144 Further discussion on General RRM requirements for extension to 71GHz**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208308 Discussion on general RRM measurement requirements for extension to 71GHz**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2208732 Discussions on the Rx beam sweeping factor**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208809 Remian issues on RRM impacts for extending NR operation to 71GHz**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208811 Draft CR - Introduction of scheduling restriction requirements in FR2-2**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2208946 Discussion on general requirements for extending NR operation to 71GHz**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209050 Draft CR to TS 38.133 Corrections on scheduling availability in FR2-2**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2209094 On inter\_frequency requriements with LBT**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

inter\_frequency requriements with LBT

**Decision: Revised to R4-2211036 (from R4-2209094).**

**R4-2211036 On inter\_frequency requriements with LBT**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

inter\_frequency requriements with LBT

**Decision: Return to.**

**R4-2209095 General RRM requirements for extending NR operation to 71GHz**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

General RRM requirements for extending NR operation to 71GHz

**Decision: Noted.**

**R4-2209384 Discussion on general RRM requirements for extension to 71 GHz**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2210223 Measurement procedures for FR2-2**

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

**Decision: Noted.**

##### 9.15.8.2 Timing requirements

**R4-2207781 UE transmit timing for NR operation in 52.6GHz - 71GHz**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2207782 Draft CR on UE transmit timing for NR operation in 52.6GHz - 71GHz**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2211032 (from R4-2207782).**

**R4-2211032 Draft CR on UE transmit timing for NR operation in 52.6GHz - 71GHz**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Apple*

**Decision: Not pursued.**

**R4-2208145 Further discussion on RRM timing requirements for higher SCS**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208650 UE timing requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

MRTD and MTTD values

**Decision: Noted.**

**R4-2208810 Remian issues on timing requirements for 52.6-71GHz**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208812 Draft CR - Introduction of deriveSSB-IndexFromCell tolerance requirements in FR2-2**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2208947 Discussion on timing requirements for extending NR operation to 71GHz**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209385 Discussion on RRM timing requirements for extension to 71 GHz**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2209386 Draft CR adding timing requirements for FR2-2**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2211031 (from R4-2209386).**

**R4-2211031 Draft CR adding timing requirements for FR2-2**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

##### 9.15.8.3 Interruption requirements

##### 9.15.8.4 Active BWP switching delay requirements

##### 9.15.8.5 Measurement gap interruption requirements

##### 9.15.8.6 LBT impacts on RRM requirements

**R4-2207784 LBT impacts on RRM requirements for NR operation in 52.6GHz - 71GHz**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2208056 Discussion on LBT impacts on RRM requirements for NR 52.6 – 71 GHz**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208057 DraftCR for FR2-2 LBT support in RRC\_IDLE, RRC\_INACTIVE and RRC\_CONNECTED state mobility requirements**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Revised to R4-2211033 (from R4-2208057).**

**R4-2211033 DraftCR for FR2-2 LBT support in RRC\_IDLE, RRC\_INACTIVE and RRC\_CONNECTED state mobility requirements**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Endorsed.**

**R4-2208472 Discussion on LBT impacts on RRM requirements in FR2-2**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2208948 Discussion on LBT impacts for extending NR operation to 71GHz**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2208949 Draft CR on RLM and Link recovery procedures for unlicensed operation in FR2-2**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211034 (from R4-2208949).**

**R4-2211034 Draft CR on RLM and Link recovery procedures for unlicensed operation in FR2-2**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209051 Draft CR to TS 38.133 Intra-frequency measurement requirements with CCA in FR2-2**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2211035 (from R4-2209051).**

**R4-2211035 Draft CR to TS 38.133 Intra-frequency measurement requirements with CCA in FR2-2**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2209053 Discussion on RRM requirements with CCA in FR2-2**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2209096 LBT impacts on RRM requirements for extending NR operation to 71GHz**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

LBT impacts on RRM requirements for extending NR operation to 71GHz

**Decision: Noted.**

**R4-2210232 DraftCR for FR2-2 LBT support in L1-RSRP measurements for reporting**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

The draftCR updates clause 9.5 and/or 9.5a based on agreements related L1-RSRP

**Decision: Endorsed.**

**R4-2211180 DraftCR for FR2-2 LBT support in L1-RSRP measurements for reporting**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

The draftCR updates clause 9.5 and/or 9.5a based on agreements related L1-RSRP

**Decision: Withdrawn.**

#### 9.15.9 RRM performance requirements

**R4-2208146 Test case list for NR extension to 71 GHz RRM requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208731 Views on the statistical tests for Te requirements**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208813 Discussion on performance requirements for 52.6-71GHz**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208950 Discussion on performance requirements for extending NR operation to 71GHz**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209052 Discussion on RRM performance in FR2-2**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2210224 FR2-2 RRM Performance Work Plan**

*Type: Work Plan For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Approved.**

#### 9.15.10 Demodulation and CSI requirements

##### 9.15.10.1 General

##### 9.15.10.2 UE Demodulation and CSI requirements

###### 9.15.10.2.1 PDSCH requirements

###### 9.15.10.2.2 PDCCH/PBCH requirements

###### 9.15.10.2.3 SDR requirements

###### 9.15.10.2.4 CSI reporting requirements

##### 9.15.10.3 BS demodulation requirements

###### 9.15.10.3.1 PUSCH requirements

###### 9.15.10.3.2 PUCCH requirements

###### 9.15.10.3.3 PRACH requirements

### 9.16 Enhancements to Integrated Access and Backhaul (IAB) for NR

#### 9.16.1 General

#### 9.16.2 RF requirements maintenance

#### 9.16.3 RF conformance testing

#### 9.16.4 RRM core requirements maintenance

#### 9.16.5 RRM performance requirements

**R4-2208734 [dCR] Maintenance for IAB-MT test cases R16**

*Type: draftCR For: Endorsement  
 38.174 v16.6.0 CR- rev Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

This is a R16 Cat F draft CR.

**Decision: Endorsed.**

**R4-2208735 [dCR] Maintenance for IAB-MT test cases R17 Cat A**

*Type: draftCR For: Endorsement  
 38.174 v17.0.0 CR- rev Cat: A (Rel-17)  
  
 Source: ZTE Corporation*

**Abstract:**

This is a R17 Cat A draft CR.

**Decision: Endorsed.**

#### 9.16.6 Demodulation requirements

### 9.17 NR coverage enhancements

#### 9.17.1 UE RF requirement maintenance

**[103-e][112] NR\_cov\_enh\_maintenance, AI 9.17.1 – Shan Yang**

**R4-2210247 Email discussion summary for [103-e][112] NR\_cov\_enh\_maintenance**

*Type: other For: Information  
 Source: Moderator (China Telecom)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210447 (from R4-2210247).**

**R4-2210447 Email discussion summary for [103-e][112] NR\_cov\_enh\_maintenance**

*Type: other For: Information  
 Source: Moderator (China Telecom)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210548 | WF on DMRS bundling for CA, SUL and FR2-2 | China Telecom | Capture the following issues:  Issue 1-1: Phase continuity requirement applicability for bands capable of UL-MIMO and TxD  Sub-topic 1-2: Phase continuity requirements for CA/DC  Sub-topic 1-3: Phase continuity requirements for SUL band  Issue 1-4-2: DMRS bundling to FR2-2 |
| R4-2210549 | LS on DMRS bundling | MediaTek | To RAN1, RAN2  Capture the following issue:  Issue 1-4-1: Restriction on modulation order for FG 30-4  Capture the following issues if any progress can be made:  Sub-topic 1-2: Phase continuity requirements for CA/DC  Sub-topic 1-3: Phase continuity requirements for SUL band  Issue 1-4-2: DMRS bundling to FR2-2 |
| R4-2210550 | LS on measurement of phase continuity requirements for DMRS bundling | Ericsson | To RAN5  Capture the following issues:  Issue 2-1: Frequency correction for phase tolerance test  Sub-topic 2-3: Necessity and approach of testing multiple bundles |
| R4-2210551 | draft CR to TS 38.101-1: Maintenance of phase continuity requirements for DMRS bundling | MediaTek | Capture the following issues:  Issue 1-1: Phase continuity requirement applicability for bands capable of UL-MIMO and TxD (if any spec chage is needed)  Issue 1-4-3: Further clarification on exceptions for phase tolerance (power control behaviour)  Issue 1-4-5: Removal of square brackets on the requirements |
| R4-2211126 | draft CR to TS 38.101-2: Maintenance of phase continuity requirements for DMRS bundling | MediaTek | Capture the following issues:  Issue 1-1: Phase continuity requirement applicability for bands capable of UL-MIMO (if any spec chage is needed)  Issue 1-4-3: Further clarification on exceptions for phase tolerance (power control behaviour)  Issue 1-4-4: Composite Tx signal impact in FR2  Issue 1-4-5: Removal of square brackets on the requirements |
| R4-2211173 | DMRS bundling for CA and DC | Qualcomm | CR  AI 9.17.1.1, Rel-17, 38.101-3, 17.5.0 Cat-F |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207861 | R4-2210734 | Updated summary of RF agreements for NR coverage enhancements WI | China Telecom | Revised | Capture additional agreement according to offline comment |
| R4-2209163 |  | On remaining issues for NR coverage enhancements | Huawei, HiSilicon | Noted |  |
| R4-2209164 | R4-2210735 | CR on clarification for DMRS bundling RF requirements for SUL in TS 38.101-1 | Huawei, HiSilicon | Revised | Capture the following issues:  Sub-topic 1-3: Phase continuity requirements for SUL band |
| R4-2209165 |  | CR on UE RF requirements for DMRS bundling in TS 38.101-1 | Huawei, HiSilicon | Agreed | Resubmission of the approved CR R4-2206538 |
| R4-2210081 |  | DMRS bundling – UE RF “maintenance” aspects | MediaTek (Chengdu) Inc. | Noted |  |
| R4-2207657 |  | Discussion on additional requirements for DMRS bundling | Qualcomm Incorporated, China Telecom, T-Mobile USA, Verizon, CMCC | Noted |  |
| R4-2207659 | R4-2210736 | CR 38.101-1 DMRS for CA | Qualcomm Incorporated, China Telecom, T-Mobile USA, CMCC, Nokia | Revised | Capture the following issues:  Sub-topic 1-2: Phase continuity requirements for CA/DC |
| R4-2207695 |  | On coverage enhancement combined with UL MIMO | Apple | Withdrawn |  |
| R4-2207862 |  | Maintenance of phase continuity requirements for DMRS bundling | China Telecom | Noted |  |
| R4-2207864 |  | Reply LS on modulation order for DMRS bundling | China Telecom | Noted |  |
| R4-2209456 |  | remaining issue related to DMRS bundling requirement | Ericsson | Noted |  |
| R4-2209458 |  | CR on DMRS bundling phase offset Requirment FR1 | Ericsson | Return to |  |
| R4-2209459 |  | CR on DMRS bundling phase offset Requirment FR2 | Ericsson | Agreed |  |
| R4-2210215 |  | Handling of UL CA for DMRS bundling | Qualcomm Incorporated | Noted |  |
| R4-2207863 |  | On measurement of phase continuity requirements for DMRS bundling | China Telecom | Noted |  |
| R4-2209157 |  | Phase difference measurement for DMRS bundling | Anritsu Limited | Noted |  |
| R4-2209158 |  | Draft CR for new additions to Annex F9 related to the FR1 DMRS bundling requirements | Anritsu Limited | withdrawn |  |
| R4-2209159 |  | Draft CR for new additions to Annex F9 related to the FR2 DMRS bundling requirements | Anritsu Limited | withdrawn |  |
| R4-2209457 |  | On measurement of the TX coherent transmission | Ericsson | Noted |  |
| R4-2209460 | R4-2210737 | CR on DMRS bundling phase offset measurement FR1 | Ericsson | Revised,  and add “Anritsu Limited” as co-sourcing company | Capture the following issues:  Issue 1-4-6: SCS for FR1 test, if option 2 with new TDD pattern for 15kHz can be agreeable  Issue 2-2-1: OFDM symbols for deriving the phase value  Issue 2-2-2: Phase offset measurement  Issue 2-2-3: Average of phase tolerances within one bundle  Issue 2-2-4: Time offset |
| R4-2209461 | R4-2210738 | CR on DMRS bundling phase offset measurement FR2 | Ericsson | Revised,  and add “Anritsu Limited” as co-sourcing company | Capture the following issues:  Issue 2-2-1: OFDM symbols for deriving the phase value  Issue 2-2-2: Phase offset measurement  Issue 2-2-3: Average of phase tolerances within one bundle  Issue 2-2-4: Time offset |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210548 |  | WF on DMRS bundling for CA, SUL and FR2-2 | China Telecom | Approved |  |
| R4-2210549 | R4-2211225 | LS on DMRS bundling | MediaTek | Approved |  |
| R4-2210550 |  | LS on measurement of phase continuity requirements for DMRS bundling | Ericsson | Approved |  |
| R4-2210551 |  | draft CR to TS 38.101-1: Maintenance of phase continuity requirements for DMRS bundling | MediaTek | Postponed |  |
| R4-2211126 |  | draft CR to TS 38.101-2: Maintenance of phase continuity requirements for DMRS bundling | MediaTek | Postponed |  |
| R4-2210734 |  | Updated summary of RF agreements for NR coverage enhancements WI | China Telecom | Noted |  |
| R4-2210735 |  | CR on clarification for DMRS bundling RF requirements for SUL in TS 38.101-1 | Huawei, HiSilicon | Postponed |  |
| R4-2210736 |  | CR 38.101-1 DMRS for CA | Qualcomm Incorporated, China Telecom, T-Mobile USA, CMCC, Nokia | Postponed | The content in rev1 version is agreeable, and the CR is recommended to be endorsed. |
| R4-2211173 |  | DMRS bundling for CA and DC | Qualcomm | Agreed | v06\_Apple\_QC(2) version is agreeable, and the formal CR is recommended to be agreed. |
| R4-2209458 |  | CR on DMRS bundling phase offset Requirment FR1 | Ericsson | Not pursued |  |
| R4-2210737 |  | CR on DMRS bundling phase offset measurement FR1 | Ericsson, Anritsu Limited | Agreed |  |
| R4-2210738 |  | CR on DMRS bundling phase offset measurement FR2 | Ericsson, Anritsu Limited | Agreed |  |

**R4-2210548 WF on DMRS bundling for CA, SUL and FR2-2**

*Type: other For: Approval  
 Source: China Telecom*

**Decision: Approved.**

**R4-2210549 LS on DMRS bundling**

*Type: LSout For: Approval  
 Source: Mediatek*

**Decision: Revised to R4-2211225 (from R4-2210549).**

**R4-2211225 LS on DMRS bundling**

*Type: LSout For: Approval  
 Source: Mediatek*

**Decision: Approved.**

**R4-2210550 LS on measurement of phase continuity requirements for DMRS bundling**

*Type: LSout For: Approval  
 Source: Ericsson*

**Decision: Approved.**

**R4-2210551 draft CR to TS 38.101-1: Maintenance of phase continuity requirements for DMRS bundling**

*Type: draftCR For: Endorsement  
 Source: Mediatek*

**Decision: Postponed.**

**R4-2211126 draft CR to TS 38.101-2: Maintenance of phase continuity requirements for DMRS bundling**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: MediaTek*

**Decision: Postponed.**

**R4-2211173 DMRS bundling for CA and DC**

*Type: CR For: Agreement  
 38.101-3 v17.5.0 CR-0731 rev Cat: F (Rel-17)  
  
 Source: Qulacomm*

**Decision: Agreed.**

**GTW on May 17**

**1.1 Issue 1-1: Phase continuity requirement applicability for bands capable of UL-MIMO and TxD**

**Discussion in round 2:**

Companies to provide further feedback on:

* Q1: The phase continuity requirement for **UL-MIMO** is applied per antenna connector or per layer (combined signal), considering both FR1 and FR2?
  + Q1A: Any spec impact if the requirement for UL-MIMO is applied **per antenna connector**?
  + Q1B: Any spec impact if the requirement for UL-MIMO is applied **per layer (combined signal)**?
* Q2: The phase continuity requirement for **FR1 TxD** is applied per antenna connector or per layer (combined signal), considering the current specification for TxD feature?
  + Q2A: Any spec impact if the requirement for FR1 TxD is applied **per antenna connector**?
  + Q2B: Any spec impact if the requirement for FR1 TxD is applied **per layer (combined signal)**?

**Moderator: to aligned with FR2, we prefer per-layer.**

**Ericsson: we do not see the need to introduce the new test per layer since we have per-antenna connector test. FR2 has not antenna connector.**

**Apple: we prefer not to introduce the new requirement. We are not accutaly changing per-layer and not defininign the new requirements.**

**Mediatek: it should be per-antenna connector. If per-layer, it involves multiple antenna, we need analyis and some relaxation is needed.**

**Qualcomm: where the argument of new test and per-layer test, moderator summary is good.**

**Mediaket: we have not simulated uplink MIMO. We hesitate to reuse anything.**

**Huawei: our understanding is that the title is not improper. The separate discussion for FR1 and FR2 would be better way. Ericsson simulation is for FR1 TxD. The performance can be guaranteed. If we going to talk about UL-MIMO and TxD combining with JCE, we do not want to create any new requirements.**

**China telecom: the issue is that for some frequency band the high end UE has already had the two antenna connectors. If we do not clarify then there is no requirement for them. If in our understanding we do not add some new, the requirement is applied per antenna connector. We would like to check if the requirement can be applied per antenna connector. For the simulation, if we use one layer, regardless, when there is one layer the performance won’t degrade. TxD and UL-MIMO can be used for increasing the TxD. The spec should not prevent from using both features together.**

**Ericsson: we observe that for the bundling size less than 8 ms then the tx correhent requirement cannot be held. This is something we need tighten the requirement if the bundling size is less than 8 ms. Our recommendation is to leave the requirement as it is.**

**Qualcomm: from technical aspects, we do not know why we should discuss it. We do not have any requirement of power imbalance for UL-MIMO for this case. Maybe we should define the requirement per-DMRS port.**

**Mediatek: for FR2 we are OK. For FR1, we understand if you do non-coherent transmission, you do not need the relative phase continuity between two connectors.**

**Ericsson: for FR2 we only have one-layer DFT-s-OFDM. Does it applies per port? For FR2 TDD, we only have less than 8 ms. For 8ms we cannot fit the Tx coherent requirement.**

**Apple: it is possible to try some baseline. For coherent MIMO, we have the requirement of relative phase continuity and phase continuity of JCE. We can update the applicability.**

**China Telecom: I do not quite understand the relation between phase continuity in time domain and relative coherent phase continuity for coherent MIMO. Could we have general agreement: if UE indicates supporting MIMO and TXD and DMRS bundling, those features can be used together.**

**Agreement: If UE indicates supporting one-layer MIMO/TxD and DMRS bundling, those features can be supported together by the UE.**

**2.1 Issue 1-2-1: Phase continuity requirements for FR1+FR2 CA, FR1+FR2 DC and EN-DC with FR2 NR**

* *Candidate options*
  + *Option 1: DMRS bundling requirements for FR1+FR2 CA, FR1+FR2 DC and EN-DC with FR2 NR apply per CC in Rel-17 (Qualcomm, China Telecom, T-Mobile USA, Verizon, CMCC, AT&T, E///, Nokia)*
    - *The operation between FR1 and FR2 is typically considered independent in RAN4 RF requirements.*
    - *Important scenario for coverage enhancement.*
  + *Option 2: DMRS bundling requirements do not apply in the case that UL CA and MR-DC are configured in the UE in Rel-17 (MTK, Samsung, Apple)*
    - *The work item was declared 100% complete in March, and RAN4 has never discussed such requirements in any detail.*
  + *Option 3: Subject to RAN plenary decision, add the corresponding objectives to the Rel-18 if needed (Apple)*
* ***Understanding of the current RAN4 specification***
  + ***For the support of option 1:*** *maybe there is no need to add DMRS bundling spec change. In the current 38.101-3, the transmit modulation quality requirements are applied per CC. Since DMRS bundling requirement is one of the transmit modulation quality requirements, i.e., introduced under clause 6.4.2, perhaps no additional clarification in RAN4 spec is ok. (E///, China Telecom, Nokia)*
  + ***For the support of option 2:*** *If the 38.101-3 spec implicitly covers FR1+FR2 aggregation then it should be clarified that it is not applicable in Rel-17, aligned with the information we provided to RAN1. (MTK)*
* ***Understanding of the current RAN1 specification***
  + ***Understanding #1:*** *RAN1 have not defined any constraints for CA or DC operation. However, RAN1 are discussing UE capabilities for DMRS bundling with CA or DC, including if the feature is supported per band and per band combination. (E///, China Telecom, Nokia)*
  + ***Understanding #2:*** *RAN1 does not have an agreement on CA scenario for the coverage enhancement of Rel-17 at all. (Samsung)*

***Recommendation for 2nd round discussion:***

* *Further discuss the three options, and proponents of the first two options are encouraged to further clarify the RAN4 spec impact.*

Discussions:

ZTE: support option 1. In the begining of WI, we sent LS to RAN1 that no power control … It should be OK to maintain the phase continuity.

Mediatek: The phase continuity applies when there is no P-MPR change. Should we say this requirement applies as well when any carriers changes the power and there is impact on other carriers?

Apple: in 101-3 spec, we do not include any language for P-MPR. We need somehow handling it if we open the door for CA. Our preference is option 3. Addressing P-MPR issue will take long way.

Qualcomm: I do not think we have already agreed the power change for this phase continuity requirements. In CR, there is no power change on CC with phase continuity. Those features should not be precluded.

Qualcomm: the requirement is defined per FR1 and per FR2. There is no requirement across FR1 and FR2. We could introduce the sentence in 101-3 to clarify this.

Apple: the requirement for FR1 and FR2 can be independent. The spec does not handle the case where the P-MPR is applied to FR1 CC because the power change on FR2.

ZTE: at least in RAN4 discussion, there is no discuss for joint FR1 and FR2 regulation.

Verizon: we support Option 1. We agree with ZTE last comment.

Apple: even though there is no MPR for 101-3 it does not mean there is no regulation for joint FR1 SAR and FR2 MPE.

Verizon: we prefer the generic way.

ZTE: agree with Verizon. The join PMR will impact all the FR1+FR2 joint transmission. The key issue is to maintain FR1 and FR2 power unchanged.

Qualcomm: If we have one uplink, there is not problem. RAN1 does not introduce P-MPR. RAN1 introduces some general requirement. P-MPR is implementation issue. For FR1+FR2 both band can be activated which is supported. For FR1, we need some restriction. We are OK to add in 101-3 some condition about power change.

Mediatek: we should come back in half hour to discussion P-MPR. RAN1 states that the power should be maintained constant across the bundling. We can discuss it later.

Huawei: We think one bullet is misleading. No RAN1 impact in Rel-17

Tentative agreement:

* DMRS bundling requirements for FR1+FR2 CA, FR1+FR2 DC and EN-DC with FR2 NR apply per CC in Rel-17
  + - The operation between FR1 and FR2 is typically considered independent in RAN4 RF requirements.
    - The phase tolerance requirement is applied when No change of power level and P-MPR on both FR1 and FR2 CCs for the UE.
      * Capture it in 38.101-3 as additional side condition
    - Important scenario for coverage enhancement.
    - There is no RAN1 impact in Rel-17

Agreement:

* DMRS bundling requirements apply to DL FR1+FR2 CA with one uplink CC transmission either on FR1 or FR2 in per CC manner in Rel-17
  + - The operation between FR1 and FR2 is typically considered independent in RAN4 RF requirements.
    - Important scenario for coverage enhancement.
* DMRS bundling will be configured on one uplink band for FR1+FR2 CA, FR1+FR2 DC and EN-DC with FR2 NR in Rel-17

**Issue 1-2-2: Phase continuity requirements for FR1 inter-band CA with one UL CC**

**Discussion in round 2:**

* Q1: For the understanding of the RAN1 spec status, proponents of option 1 are encouraged to answer the questions raised in round 1:
  + Q1A: Applicability of DMRS bundling to DL CA was not discussed in RAN1
  + Q1B: It is not clear how the HARQ timeline is impacted for the DL carriers. Not certain whether the PHY layer specification supports this scenario in the current release of the specification
* Q2: For option 1, companies to check if the following spec change proposed in R4-2207659 correct?

6.4A.2.3 Transmit modulation quality for inter-band CA

For inter-band carrier aggregation with one uplink carrier assigned to one NR band, the transmit modulation quality requirements in subclause 6.4.2 apply including phase continuity requirements for DMRS bundling [IE name].

* Q3: For option 2, companies to clarify if any RAN4 spec change needed?

Discussion:

Mediatek: this is one UL CC. It is not talking about the switching.

ZTE: Support option 1. I wonder if we can extend to intra-band uplink CA case. We send LS to RAN1 if there is no change of power and if other uplink Scell power is changed, the phase can still be kept.

China Telecom: To Mediatek, the uplink band or CC is one uplink configured which is different from Tx switching. We can add that with one uplink is configured.

Apple: regarding switching, we do not think it has been discussed. We are open to Rel-18. There is no need to agree on this one.

Agreement:

* DMRS bundling requirements apply to FR1 DL CA with one uplink CC configured in Rel-17

**Issue 1-2-3: Phase continuity requirements for FR1 inter-band UL CA**

**Discussion in round 2:**

* Q1: For option 1 with case A, companies to check if the following spec change proposed in R4-2207659 correct?

6.4A.2.3 Transmit modulation quality for inter-band CA

……

For inter-band carrier aggregation with uplink assigned to two NR bands, the transmit modulation quality requirements shall apply on each component carrier as defined in clause 6.4.2 with all component carriers active: PCC with PRB allocation and SCC without PRB allocation and without CSI reporting and SRS configured. For DMRS bundling [ IE name], requirements for phase continuity in clause 6.4.2.5 apply for PCC when SCC has no UL allocation for the duration of the bundle on PCC.

* Q2: For option 1 with case B, companies to clarify the spec change needed.
* Q3 For option 2, companies to clarify if any spec impact is needed.

Discussion:

Apple: UE should be with two carriers configured. Two uplink, one activated with not transmission and one transmission… We do not need rash for agreement for this. We are ok with CA with one uplink configured.

Mediatek: What is the difference between case a and b? what is non-overlapping. What happens if there is overlap?

Qualcomm: We are discussing the requirement for UE. It is on the question on actual operation in the network. We have the case when we have already agreed one uplink carrier configured. Two can be configured and activated and we can have bundling on both CCs. For Option 1, I wonder if there is any comment. There is no transmission on the other band.

Mediatek: what are we talking about? I would like to know what the configuration is here.

Apple: we have concern related to switching.

ZTE: RAN1 spec uses RRC to configure.

Mediatek: Uplink allocation includes PUCCH and/or SRS?

China telecom: there is no uplink transmission for testing. The other uplink can transmit without uplink bundling.

Mediatek: the other band, on PCC, you transmit something. On SCC you may not transmit anything. Now CTC said that UE may transmit data on the other band, which is totally new.

Huawei: we would like to better understand the discussion. The first thing is that does it mean in transmit interval the DMRS bundling is enabled on one band and in the other interval DMRS bundling will be enabled on the other band. Can the mechanism cover dropping issue.

Discussion points:

* + Define FR1 inter-band UL CA requirements for DMRS bundling, and Ran4 can further restrict or discuss cases as follows:
  + Only one band can support DMRS bundling at a time, with limited specification impact as shown in R4-2207659.
  + DMRS bundling will be configured on one uplink band
  + No RAN1 impact in Rel-17

**Issue 1-2-4: Granularity of the UE capability for DMRS bundling**

***Summary of round 1 discussion:***

* *Candidate options*
  + *Option 1: Define the capability for DMRS bundling per band per band combination, and send LS to RAN1. (Qualcomm, Verizon, T-Mobile USA, AT&T)*
  + *Option 2: per band as agreed in the previous meeting (MTK, Apple)*
  + *Option 3: depend on issue 1-2-1, 1-2-2 and 1-2-3 (E///, QC, Samsung)*

***Recommendation for 2nd round discussion***

* *Pending on the discussion in Issue 1-2-1/3*

Discussion:

Mediatek: feel confusion.

Qualcomm: can we agree on FR1+FR2?

Mediatek: we would like to understand what the agreement is. Understand the condition on what we will transmit.

ZTE: most likely per-band per band combination can be used for all the cases.

Apple: It should be possible to inform the two agreed scenario to Ran1 for signaling design.

Tentative agreement: Define the capability for DMRS bundling per band per band combination of FR1+FR2, and send LS to RAN1.

**Issue 1-3: Phase continuity requirements for SUL band**

**Discussion in round 2:**

* Q1: Is it correct understanding that no additional RAN1 impact needed?
* Q2: Any comments on the following spec impact proposed in R4-2209164?

6.4C Transmitter signal quality for SUL

For the UE which is configured with both NR UL and NR SUL carriers in a serving cell with active transmission either on the UL carrier(s) or SUL carrier, the transmitter signal quality requirements specified in clause 6.4.2 are applicable for the UL carrier(s) and the SUL carrier, respectively. If the UE indicates that it is capable of DMRS bundling [IE name] on the NR SUL band, requirements for phase continuity in clause 6.4.2.5 apply for the corresponding SUL carrier.

Discussion:

Moderator: there is no parallel transmission and no RAN1 impact.

Apple: The similar concern as previous, i.e., switching.

Huawei: For SUL we all know there would be no transmission for SUL and NUL. There could be no overlapping. Introduction of SUL case, when switching happens, UE does not need guarantee the continuity per band. We have not reached the agree for CA. If we find no issue for inter-band CA, then we have no issue for SUL as well.

Mediatek: in the case when you switch, we would like to specify clearly if it happens during the bundling duration. Then UE does not need to maintain the phase continuity.

ZTE: Since we have discussed intra-band CA, from RAN4 perspective, it is better to have a package.

Qualcomm: If needed we can add the same note that only one band is configured at a time can be applied for both CA and SUL. But we think DMRS bundling can configured on both carriers.

Huawei: To Mediatek, it should be clarify that SRS switching should be clarified. The same thing should be clarified for single band transmission. To Qualcomm, we believe the hard timeline issue issue, UE share the single downlink between SUL and NUL. If the DCI comes from only one DL CC, there is no issue, which is the main difference between CA and SUL.

China Telecom: SUL and Tx switching are separate features. On the additional event, in RAN4 we have two cases: back to back and non back-to-back. We do not need add new event. Regarding ZTE comment, the issue is different from CA. In CA, the other CC will have impact. For SUL we have no such issue. To Qualcomm, for SUL we do not preclude the DMRS bundling. We do not need additional restriction.

Mediatek: if UE switches to other CC and it is within the bundling, then UE is not expected to keep the phase continuity. For DL CA case if considering the other CC with SRS switching then the same event should be applied there. We should be consistent.

ZTE: tend to agree Qualcomm.

-----------------------------------------------------------------------------------------------------------------------

Tentative agreement: Define FR1 inter-band UL CA for DMRS bundling, and Ran4 can further restrict as follows:

* + Only one band can support DMRS bundling at a time
  + [DMRS bundling will be configured on one uplink band]
  + No RAN1 impact in Rel-17
  + If there is any carrier switching back and forth between two carriers and the switching happens within the bundling duration, then the phase continuity does not need to be maintained on a carrier
  + For FR1 inter-band UL CA, UE does not transmit on two carriers simultaneously. [If the simultaneous transmissions of PUSCH, PUCCH, and/or SRS are scheduled, then the phase continuity will be broken.]

Tentative agreement: Define SUL requirements for DMRS bundling, and Ran4 can further restrict as follows:

* + [DMRS bundling will be configured on one uplink band]
  + No RAN1 impact in Rel-17
  + If there is any carrier switching back and forth between two carriers and the switching happens within the bundling duration, then the phase continuity does not need to be maintained on a carrier

---------------------------------------------------------------------------------------------------------------------------------

**R4-2207861 Updated summary of RF agreements for NR coverage enhancements WI**

*Type: other For: Information  
 Source: China Telecom*

**Decision: Revised to R4-2210734 (from R4-2207861).**

**R4-2210734 Updated summary of RF agreements for NR coverage enhancements WI**

*Type: other For: Information  
 Source: China Telecom*

**Decision: Noted.**

**R4-2209163 On remaining issues for NR coverage enhancements**

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

**Decision: Noted.**

**R4-2209164 CR on clarification for DMRS bundling RF requirements for SUL in TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1085 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210735 (from R4-2209164).**

**R4-2210735 CR on clarification for DMRS bundling RF requirements for SUL in TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1085 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

**R4-2209165 CR on UE RF requirements for DMRS bundling in TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1086 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Resubmission of the endorsed CR R4-2206538, since it is accidentaly not included in TS 38.101-1 v17.5

**Decision: Agreed.**

**R4-2210081 DMRS bundling – UE RF “maintenance” aspects**

*Type: discussion For: Agreement  
 Source: MediaTek (Chengdu) Inc.*

**Abstract:**

Resolution of some "maintenance" issues

**Decision: Noted.**

##### 9.17.1.1 Phase continuity core requirement maintenance

**R4-2207657 Discussion on additional requirements for DMRS bundling**

*Type: other For: Approval  
 Source: Qualcomm Incorporated, China Telecom, T-Mobile USA, Verizon, CMCC*

**Decision: Noted.**

**R4-2207658 Handling of UL CA for DMRS bundling**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2207659 CR 38.101-1 DMRS for CA**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1049 rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated, China Telecom, T-Mobile USA, CMCC, Nokia*

**Decision: Revised to R4-2210736 (from R4-2207659).**

**R4-2210736 CR 38.101-1 DMRS for CA**

*Type: CR For: Approval  
 38.101-1 v17.5.0 CR-1049 rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated, China Telecom, T-Mobile USA, CMCC, Nokia*

**Decision: Postponed.**

**R4-2207695 On coverage enhancement combined with UL MIMO**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2207862 Maintenance of phase continuity requirements for DMRS bundling**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2207864 Reply LS on modulation order for DMRS bundling**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: China Telecom*

**Decision: Noted.**

**R4-2209456 remaining issue related to DMRS bundling requirement**

*Type: discussion For: Approval  
 Source: Ericsson*

**Abstract:**

In this paper, we present our view on the remaining issue related to RF requirement.

**Decision: Noted.**

**R4-2209458 CR on DMRS bundling phase offset Requirment FR1**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1099 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR to update DMRS bundling requiremeent

**Decision: Not pursued.**

**R4-2209459 CR on DMRS bundling phase offset Requirment FR2**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0461 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR to update the DMRS bundling requirement

**Decision: Agreed.**

**R4-2210215 Handling of UL CA for DMRS bundling**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

##### 9.17.1.2 Issues for measurement and test setup

**R4-2207863 On measurement of phase continuity requirements for DMRS bundling**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2209157 Phase difference measurement for DMRS bundling**

*Type: discussion For: Approval  
 Source: Anritsu Limited*

**Decision: Noted.**

**R4-2209158 Draft CR for new additions to Annex F9 related to the FR1 DMRS bundling requirements**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Anritsu Limited*

**Decision: Withdrawn.**

**R4-2209159 Draft CR for new additions to Annex F9 related to the FR2 DMRS bundling requirements**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Anritsu Limited*

**Decision: Withdrawn.**

**R4-2210344 Draft CR for new additions to Annex F9 related to the FR1 DMRS bundling requirements**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Anritsu Limited*

**Decision: Merged.**

**R4-2210345 Draft CR for new additions to Annex F9 related to the FR2 DMRS bundling requirements**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Anritsu Limited*

**Decision: Merged.**

**R4-2209457 On measurement of the TX coherent transmission**

*Type: discussion For: Approval  
 Source: Ericsson*

**Abstract:**

In this paper, we present our view on the remaining issue related to RF requirement testing.

**Decision: Noted.**

**R4-2209460 CR on DMRS bundling phase offset measurement FR1**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1100 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR to update DMRS bundling measurment

**Decision: Revised to R4-2210737 (from R4-2209460).**

**R4-2210737 CR on DMRS bundling phase offset measurement FR1**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1100 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR to update DMRS bundling measurment

**Decision: Agreed.**

**R4-2209461 CR on DMRS bundling phase offset measurement FR2**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0462 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR to update DMRS bundling measurment

**Decision: Revised to R4-2210738 (from R4-2209461).**

**R4-2210738 CR on DMRS bundling phase offset measurement FR2**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0462 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR to update DMRS bundling measurment

**Decision: Agreed.**

#### 9.17.2 BS demodulation requirements

##### 9.17.2.1 PUSCH requirements

##### 9.17.2.2 PUCCH requirements

### 9.18 Further enhancements on MIMO for NR

#### 9.18.1 UE RF requirement maintenance

**[103-e][113] NR\_feMIMO\_maintenance, AI 9.18.1 –Taekhoon Kim**

**R4-2210248 Email discussion summary for [103-e][113] NR\_feMIMO\_maintenance**

*Type: other For: Information  
 Source: Moderator (Samsung)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210448 (from R4-2210248).**

**R4-2210448 Email discussion summary for [103-e][113] NR\_feMIMO\_maintenance**

*Type: other For: Information  
 Source: Moderator (Samsung)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210552 | WF on FeMIMO maintenance | Samsung |  |
| R4-2211174 | LS on GP positioning between two UL SRS resource sets | Nokia, Nokia Shanghai Bell | To RAN1 |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207663 |  | Transmissions on a gap between SRSs | Qualcomm Incorporated | Noted |  |
| R4-2207778 |  | On per-beam based PMPR | Apple | Noted |  |
| R4-2207779 |  | On SRS switching in FeMIMO | Apple | Noted |  |
| R4-2208381 |  | GP position handling in gap between two UL SRS resource sets | Nokia, Nokia Shanghai Bell | Noted |  |
| R4-2208383 |  | [Draft] LS on GP positioning between two UL SRS resource sets | Nokia, Nokia Shanghai Bell | Noted | Noted |
| R4-2208601 |  | Discussion on clarification of P-MPR for Rel-17 eMIMO | vivo | Noted |  |
| R4-2208602 |  | CR for clarification of P-MPR for Rel-17 eMIMO | vivo | Return to |  |
| R4-2208775 |  | Discussion on Impact of MPE enhancements | ZTE Corporation | Noted |  |
| R4-2209167 |  | Remaining issues for SRS | Huawei, HiSilicon | Noted |  |
| R4-2210002 |  | Draft CR on P-MPR reporting and configured transmit power | Apple AB | Return to |  |
| R4-2209378 | R4-2211192 | Draft CR on clarification of PMPR in FR2 (R16) | OPPO | Revised |  |
| R4-2209379 |  | Draft CR on clarification of PMPR in FR2 (R17 CAT-A) | OPPO | Return to |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210552 | R4-2211227 | WF on FeMIMO maintenance | Samsung | Approved |  |
| R4-2211174 | R4-2211226 | LS on GP positioning between two UL SRS resource sets | Nokia, Nokia Shanghai Bell | Approved |  |
| R4-2208602 |  | CR for clarification of P-MPR for Rel-17 eMIMO | vivo | Not pursued |  |
| R4-2210002 |  | Draft CR on P-MPR reporting and configured transmit power | Apple AB | Not pursued |  |
| R4-2211192 |  | Draft CR on clarification of PMPR in FR2 (R16) | OPPO | Endorsed |  |
| R4-2209379 |  | Draft CR on clarification of PMPR in FR2 (R17 CAT-A) | OPPO | Endorsed |  |

**R4-2210552 WF on FeMIMO maintenance**

*Type: other For: Approval  
 Source: Samsung*

**Decision: Revised to R4-2211227 (from R4-2210552).**

**R4-2211227 WF on FeMIMO maintenance**

*Type: other For: Approval  
 Source: Samsung*

**Decision: Approved.**

**R4-2211174 LS on GP positioning between two UL SRS resource sets**

*Type: LSout For: Approval  
 Source: Nokia, Nokia Shsanghai Bell*

**Decision: Revised to R4-2211226 (from R4-2211174).**

**R4-2211226 LS on GP positioning between two UL SRS resource sets**

*Type: LSout For: Approval  
 Source: Nokia, Nokia Shsanghai Bell*

**Decision: Approved.**

**GTW on May-18**

**Discussion on Draft WF R4-2210552**

**Sub-topic 1-1: Whether/How to clarify P-MPR in section 6.2.4 of 38.101-2**

**Way forward/Agreement:** TBD

* **Option 1: No update at all (Huawei, ZTE, vivo, Samsung, Qualcomm)**
* Option 2: Revise NOTE 3 (OPPO, Huawei)
  + (OPPO) “NOTE 3: MPE P-MPR Reporting capability *tdd-MPE-P-MPR-Reporting-r16*, as defined in TS 38.306 [14], is used ~~an optional UE capability~~ to report P-MPRf,c when the reporting conditions configured by gNB are met. This UE capability is applicable to all FR2 power classes.”
  + (Huawei) “NOTE 3: MPE P-MPR Reporting capability *tdd-MPE-P-MPR-Reporting-r16*, as defined in TS 38.306 [14], is an optional UE capability to report P-MPRf,c when the reporting conditions configured by gNB are met. This UE capability is applicable to all FR2 power classes.”
* **Option 3: Add NOTE 4 (OPPO, vivo, Samsung, ZTE, Apple)** 
  + “NOTE 4: P-MPRf,c is determined per cell based.”

Discussion:

Huawei: We can go with Option 1 or Option 3. For Option 2 clarifying the IE is good.

Apple: Based on the agreement in the last meeting, we have agreed that some clarification is needed. Otherwise the UE may got confused. Option 1 is not consistent with agreement in the last meeting. We can accept Option 3.

OPPO: as Apple comment, RAN1 introduced the per-beam P-MPR reporting. There are two IEs. Thus we clarify which IE is used. Option 3 revised is OK.

Qualcomm: We do not see how NOTE4 can help. It does not make sense. We did not remember that we have clear agreement to change the note.

Apple: to Qualcomm, the Option 3 we need distinguishing whether UE refers to the new or existing P-MPR. We have concern on the current formula. People agree that the P-MPR referred in this requirement is per cell based.

Nokia: we support Qualcomm. In previous meeting, we discussed this because RAN1 had discussion if P\_CMAX,fc is determined per Cell. RAN1 decides the P-MPR is not per beam. We are OK with Option 2 to clarify the IE.

VIVO: We prefer Option 3. We do not have something that is very clear.

Apple: RAN1 decided per-beam based P-MPR details a meetings ago. This feature has been there for many meetings.

Agreement:

* Revise NOTE 3 from Rel-16 TS 38.306
  + MPE P-MPR Reporting capability *tdd-MPE-P-MPR-Reporting-r16*, as defined in TS 38.306 [14], is used ~~an optional UE capability~~ to report P-MPRf,c when the reporting conditions configured by gNB are met. This UE capability is applicable to all FR2 power classes.”

**Sub-topic 2-1: Symbols available for transmission in the gap between SRS resource sets larger than Y**

**Way forward/Agreement:** TBD

* Option 1: Any signals in the interval without the restriction (Huawei, Ericsson)
* Option 2: GP should exist in the interval with a certain rule based on the port change (Qualcomm, Apple)
* **Option 3: Leave it up to RAN1. RAN4 can consider it after the decision (Huawei, Qualcomm, OPPO, Nokia)**
* Option 4: A symbol position where antenna switching occurs between two SRS resource sets can be different according to antenna port transition before and/or after UL SRS resource(s) (Nokia)

**Discussion:**

Huawei: we prefer Option 1. For Option 2 whether to define GP is up to RAN1. From RAN4, TP is enough.

Nokia: we are OK with Option 2. The position may be clarified. Whether it is GP or TP is depend on RAN1. We do not support Option 3. In RAN1 discussion, they think the issue is up to RAN4.

Ericsson: we prefer Option 1. This is current understanding. Moreover, RAN4 did not specify the GP. TP exists antenna switching. There are cases in the field there would be corruption. Specifying Y in RAN1 means GP is mandated, which cause less possibility for network to configure transmission in gap. In RAN4 initial understanding there is no need GP which allows more efficient using the resource.

OPPO: We check with RAN1. RAN1 concluded that no more discussion on this issue. RAN1 think this is up to implementation.

Meta: For clarification, GP is defined as one symbol gap. Some companies are talking about 15us TP. Which scenarios for switching are we talking about to apply the GP or TP?

Apple: our view is that we have concern that some companies proposed GP is different from Ran1 spec. We can accept Option 3. If RAN1 stops the discussion, we can try to send LS to trigger the discussion. Regarding Option 1, it is not aligned with RAN1 spec. In RAN1 spec, always GP is allowed. Option 1 seems remove the GP. Option 2 and 3 are OK for us.

Huawei: Like OPPO, RAN1 has concluded and closed the discussion. If Ran1 had strong view to add GP, they should have conclusion. From RAN4 perspective, Option 1 is only choise.

##### 9.18.1.1 Impact of MPE enhancements

**R4-2207778 On per-beam based PMPR**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2208601 Discussion on clarification of P-MPR for Rel-17 eMIMO**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208602 CR for clarification of P-MPR for Rel-17 eMIMO**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1076 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Not pursued.**

**R4-2208775 Discussion on Impact of MPE enhancements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2210002 Draft CR on P-MPR reporting and configured transmit power**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple AB*

**Decision: Not pursued.**

##### 9.18.1.2 SRS related impact

**R4-2207663 Transmissions on a gap between SRSs**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2207779 On SRS switching in FeMIMO**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2208381 GP position handling in gap between two UL SRS resource sets**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208383 [Draft] LS on GP positioning between two UL SRS resource sets**

*Type: LS out For: Approval  
 to RAN1  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2209167 Remaining issues for SRS**

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

**Decision: Noted.**

#### 9.18.2 RRM core requirement maintenance

##### 9.18.2.1 Unified TCI for DL and UL

##### 9.18.2.2 Inter-cell beam management

##### 9.18.2.3 Others

#### 9.18.3 RRM performance requirements

#### 9.18.4 UE Demodulation and CSI requirements

##### 9.18.4.1 General

##### 9.18.4.2 Demodulation requirements

###### 9.18.4.2.1 Enhancement on HST-SFN scenario

###### 9.18.4.2.2 Enhancement on Multi-TRP

##### 9.18.4.3 CSI requirements

###### 9.18.4.3.1 CSI reporting for Multi-TRP transmission

###### 9.18.4.3.2 Rel-17 eType II port selection codebook

### 9.19 Support of reduced capability NR devices

#### 9.19.1 General

**[103-e][133] NR\_RedCap, AI 9.19.1, 9.19.2 – Chunhui Zhang**

**R4-2210268 Email discussion summary for [103-e][133] NR\_RedCap**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210465 (from R4-2210268).**

**R4-2210465 Email discussion summary for [103-e][133] NR\_RedCap**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2207712](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207712.zip) | R4-2210791 | Draft CR on RedCap FR1 RF | Sony, Ericsson | Revised |  |
| [R4-2208474](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208474.zip) |  | Clarification of supporting bands and open issues in RedCap UE | Facebook Japan K.K. | Noted |  |
| [R4-2208475](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208475.zip) |  | Draft CR on TS 38.101-1 Correction on REFSENS requirements for RedCap UE | Facebook Japan K.K. | Return to |  |
| [R4-2208684](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208684.zip) | R4-2210792 | CR to TS38.101-1: Corrections on Redcap requirements | ZTE Corporation | Revised |  |
| [R4-2208859](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208859.zip) |  | Discussion on FDD Tx-Rx carrier centre frequency separation for Redcap UE | Xiaomi | Noted |  |
| [R4-2209356](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209356.zip) |  | Clarification on DL MIMO for FR2 RedCap UE with draft LS | Huawei, HiSilicon | Noted |  |
| [R4-2209357](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209357.zip) | R4-2210793 | CR for 38.101-2 to correct the errors and add the missing requirements for FR2 RedCap UE | Huawei, HiSilicon | Revised |  |
| [R4-2209488](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209488.zip) | R4-2210794 | CR on RedCap FR1 | Ericsson, Sony | Revised |  |
| [R4-2209489](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209489.zip) | R4-2210795 | CR on RedCap FR2 | Ericsson, Sony | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210791 |  | Draft CR on RedCap FR1 RF | Sony, Ericsson | Endorsed |  |
| [R4-2208475](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208475.zip) |  | Draft CR on TS 38.101-1 Correction on REFSENS requirements for RedCap UE | Facebook Japan K.K. | Not pursued |  |
| R4-2210792 |  | CR to TS38.101-1: Corrections on Redcap requirements | ZTE Corporation | Agreed |  |
| R4-2210793 |  | CR for 38.101-2 to correct the errors and add the missing requirements for FR2 RedCap UE | Huawei, HiSilicon | Agreed |  |
| R4-2210794 |  | CR on RedCap FR1 | Ericsson, Sony | Not pursued |  |
| R4-2210795 |  | CR on RedCap FR2 | Ericsson, Sony | Endorsed |  |

**GTW on May 12**

**Sub-topic 1-1**

*Sub-topic description:*

The 4 Rx is not applied to RedCap UE and two CRs address this by identifying two different places to further clarified.

*Open issues and candidate options before e-meeting:*

**Issue 1-1: # Rx baseline for RedCap UE**

* Proposals
  + Option 1: CR R4-2207712, adding note to state 4 RX is not baseline for RedCap UE (Huawei, Meta, OPPO, Ericsson, Sony, Apple, ZTE)
  + Option 2: CR R4-2208684, adding exception for 4 Rx rules for RedCap UE (Sony, Ericsson, ZTE)
  + Option 2a: For a Redcap UE the requirements in Section 7.2I assume that the receiver is equipped with either one or two Rx antenna ports. (Mediatek, Apple)
  + Option 3: no need to clarify (Vivo, Qualcomm)
* Recommended WF
  + Option 1 and 2

**Discussions:**

ZTE: We are supporter of Option 2. Option 1 is the modification of existing note. 4Rx should not be supported.

Ericsson: We share the similar view as ZTE. We need have consisten launguash in the spec. 4Rx rule is binded with the bands. Adding the clarification is good. We have both places to have clarification.

Mediatek: we can simplify. We do not need to put Redcap features in the general section.

Vivo: the common understanding. What does it mean by saysing 4Rx is not baseline?

Meta: We support option 1. We are also fine with Option 2a in case 7.2I table refers to typical UE and introduce the delta\_RIB table.

Huawei: agree with Meta. We have a note for vehicular UE in the table. Prefer Option 1. If not agreeable, option 3.

Ericsson: Add the note in section 7.2I is not good which makes the spec not consistent.

Mediatek: we have refesen which is based on 1Rx and 2Rx. And the requirements are referred to general tables.

Sony: Agree with Ericsson. We point to table. The note is part of table. The table is for 4Rx.

Ericsson: we are fine with the new table.

ZTE/Huawei: there is general statement in general section.

Mediatek: putting RedCap in the general section is the mistake.

**Sub-topic 1-2**

*Sub-topic description*

*One CR for SDL band applicability for RedCap and one CR clarify the operation mode*

*Open issues and candidate options before e-meeting:*

**Issue 1-2-1: SDL band clarification (CR R4-2209488)**

* Proposals
  + Option 1: Add note to exclude the SDL band for RedCap UE. (Ericsson, [ZTE], Sony)
  + Option 1a: NOTE 18 should be changed into "SDL bands are not applicable for RedCap UE in current version of spec." There is no need to add this note for each SDL band. General clarification in NOTE 18 is enough. SDL bands introduced in the future can be applied as well without RAN4 maintenance work. (Huawei, OPPO)
  + Option 2: Not add the note (Mediatek(CA already being excluded),
* Recommended WF
  + TBA

**Discussions:**

Huawei: We can add the note SDL bands are not applicable for RedCap UE

Ericsson: It is good to add the note SDL bands are not applicable. It is not only restricted in the current release.

Mediatek: we do not think the change is needed. CA is not in the scope.

**Issue 1-2-2: operation mode clarification (CR R4-2208684)**

* Proposals
  + Option 1: add “operating in FDD and TDD mode” in clause 7.3I.2
    - Support: ZTE, Mediatek
    - Object: Huawei, OPPO, Sony
  + Option 2: TBA
* Recommended WF
  + TBA

**Discussion:**

Huawei: the information is redundant.

ZTE: there are four types of refsens requirements. For the last paragraph, it is needed to specify FDD and TDD and explicitly preclude SDL bands.

**Sub-topic 1-3**

*Sub-topic description*

*One company provides CR for adding SUL, V2X and unlicensed band and accompanied discussion paper. This issue has been discussed several meetings in RAN4 and several meetings in RAN at RAN #93e in Sep.21 (see RP-212634) and at RAN#94e in Dec.21 (see RP-213427) and it is escalated back to RAN #95e, there is no need to discuss on this anymore considering RAN decision no time spending on these bands. Moderator suggests dropping this topic in Rel-17.*

*Open issues and candidate options before e-meeting:*

**Issue 1-3: Clarification of SUL, V2X and unlicensed band**

* Proposals
  + Option 1: discuss CR (R4-2208475) and endorsed to reflect the RAN decision “the specification will not contain any explicit restriction to prevent implementation of RedCap UEs with these features.” (Meta, OPPO)
  + Option 2: No need to discuss the SUL, V2X and unlicensed band in Rel-17 according to RAN WF and decisions in RAN#93e, RAN#94e and RAN#95e. (Mediatek, Ericsson, Sony)
* Recommended WF
  + TBA

**Discussions:**

Moderator: we do not pursue the CR. We have discussed it multiple times in RAN4 and RAN. Interpreting the RAN agreement selectively is not good.

Meta: The last RAN plenary the company CR was not purused as decision. There is no any restriction for operationg bands for the legacy UE. That is why we provide the Cat-F CR to clarify the operating band limitation.

Huawei: as far as I know, based on the RAN agreement, the features are not precluded. What harmful if we add such clarification in the spect in maintaince. Is the RAN plenary agreement valid for ever?

Ericsson: following RAN forward in Rel-17. The work in RF is closed. The maintenance belongs to Rel-17 WI. RAN agreement applies for it. In the future, if RAN approved the new agreement, we can spend time in Rel-18.

Mediatek: We have the same understanding as Ericsson. If any critical issue is identified, it won’t happen in Rel-17.

Meta: We think that RAN plenary baseline is not any block to support the whole operating bands. This is the baseline principle. It is some editorial issue. We just add RMC for the redcap device.

Qualcomm: WID needs be updated if any work is needed for band bands discussed.

Huawei: I did not agree with Qualcomm. Based on WID, there is no any explicit band number. Is there any technical comment to add this in the spec.

Meta: If you look at our CR, we do not discuss the band. It is about the refsens. We do not talk about the band.

**Sub-topic 2-1**

*Sub-topic description:*

*Open issues and candidate options before e-meeting:*

**Issue 2-1: side condition values for beam correspondence**

* Proposals
  + Option 1: According to R4-2209357 (Huawei, OPPO, Sony, Apple)
  + Option 2: No change (Ericsson)
* Recommended WF
  + TBA

**Discussions:**

Ericsson: it is rather than calculation issue. Huawei can give more detailed calucation on how to derive the values. For 100Mhz the value does not changed. We need confirm where the difference comes from.

Huawei: I just derive the values for 50MHz for PC3 condition. OK for further checking.

Samsung:

Apple: as commented the differene is less than 0.2dB. In FR2, 50, 100, 200Mhz they are scaled by bandwidth rather by real RB numbers. The RB number difference leads to the difference. Huawei propsal is more consistent.

**Sub-topic 3-1**

**Issue 3-1: Tx-Rx duplex distance**

*Sub-topic description:*

For Tx-Rx duplex distance, one company provides understanding on this issue. It seems this is aligned with most companies understanding from previous meeting, moderator think as there is no spec impact for this and therefore there is no need to further discuss this.

Open issues and candidate options before e-meeting:

* Proposals
  + Option 1: Proposal according to R4-2208859 (Xiaomi)
  + Option 2: No action in RAN4 (Huawei, OPPO, ZTE, Xiaomi, Vivo, Ericsson, Sony, Qualcomm, Apple)
* Recommended WF
  + Option 2

Agreement: For Tx-Rx duplex distance proposal, no action is needed.

**Issue 3-2: Clarify the understanding on the previous agreement about 2-layer DL MIMO for FR2 RedCap UE**

*Sub-topic description:*

One company think the sentence “RAN4 also agree the # of DL layers is not mandated for FR2 RedCap UE” in LS R4-2206545 against the WID objective and some clarification is needed.

Moderator understanding is that in previous LS RAN4 agrees that a FR2 RedCap UE equipped with 2 Rx branch can report to support 1 or 2 layers. This is up to FR2 RedCap UE capability reporting.

Open issues and candidate options before e-meeting:

* Proposals
  + Option 1: RAN4 requirement is not mandatory for supporting 2-layer DL MIMO. (Huawei, OPPO, Apple, Mediatek)
    - Send the LS to other WGs for clarification
  + Option 2: No action in RAN4 (OPPO, ZTE, Vivo, Ericsson, Sony, Apple)
  + Option 3: Others.
* Recommended WF
  + TBA

**Discussions:**

Huawei: the capability related to MIMO layer should be maintained by RAN1. RAN4 requirements should not be mandatory for supporting 2-layer. We would like to add the note to send LS.

Ericsson: most companies have the same understanding that 2-layer should not be mandated. What is the additional information sent to RAN2.

Mediatek: Our understanding is Option 1. If other WG has question, we can clarify.

Huawei: To Ericsson, RAN4 requirement is not mandatory is different from that the feature is not mandatory. We do not want other WGs to misunderstand our LS. Is the previous agreement aligned with the WID? In our understanding, the previous agreement is not aligned with WID.

Ericsson: We are not against the WF. Even for FR1, the single MIMO layer is allowe. From that principle, the single layer is allowed for FR2 too. What is the definition of Rx branch is not clearly defined. In FR2 we do not see it is mandatory thing. We see no reason to revert the decision.

Huawei: Not sure I understand clearly. The previous agreement is aligned with WID of redcap.

Ericsson: from feedback of other companies, I do not think that companies have different views on the previous agreement. Only Huawei have different understanding. We do not think it devated from the WID.

Huawei: We can send LS to clarify that the RAN4 agreement is aligned with WID.

------------------------------------------------------------------------------------------------------------------------------------------

**R4-2208474 Clarification of supporting bands and open issues in RedCap UE**

*Type: discussion For: Approval  
 Source: Facebook Japan K.K.*

**Decision: Noted.**

#### 9.19.2 UE RF requirements

##### 9.19.2.1 FR1

**R4-2208859 Discussion on FDD Tx-Rx carrier centre frequency separation for Redcap UE**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Decision: Noted.**

###### 9.19.2.1.1 Tx requirements (power class)

**R4-2209488 CR on RedCap FR1**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Ericsson, Sony*

**Abstract:**

CR to add a note to exclude the SDL band

**Decision: Revised to R4-2210794 (from R4-2209488).**

**R4-2210794 CR on RedCap FR1**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Ericsson, Sony*

**Abstract:**

CR to add a note to exclude the SDL band

**Decision: Not pursued.**

###### 9.19.2.1.2 Rx requirements (REFSENS, etc)

**R4-2207712 Draft CR on RedCap FR1 RF**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Sony, Ericsson*

**Decision: Revised to R4-2210791 (from R4-2207712).**

**R4-2210791 Draft CR on RedCap FR1 RF**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Sony, Ericsson*

**Decision: Endorsed.**

**R4-2208475 Draft CR on TS 38.101-1 Correction on REFSENS requirements for RedCap UE**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Facebook Japan K.K.*

**Decision: Not pursued.**

**R4-2208684 CR to TS38.101-1: Corrections on Redcap requirements**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1073 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2210792 (from R4-2208684).**

**R4-2210792 CR to TS38.101-1: Corrections on Redcap requirements**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1073 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

##### 9.19.2.2 FR2

###### 9.19.2.2.1 Tx requirements (power class, UE type)

**R4-2209357 CR for 38.101-2 to correct the errors and add the missing requirements for FR2 RedCap UE**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0460 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210793 (from R4-2209357).**

**R4-2210793 CR for 38.101-2 to correct the errors and add the missing requirements for FR2 RedCap UE**

*Type: CR For: Agreement  
 38.101-2 v17.5.0 CR-0460 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

###### 9.19.2.2.2 Rx requirements

**R4-2209356 Clarification on DL MIMO for FR2 RedCap UE with draft LS**

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

**Decision: Noted.**

**R4-2209489 CR on RedCap FR2**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Ericsson, Sony*

**Abstract:**

CR to remove the bracket

**Decision: Revised to R4-2210795 (from R4-2209489).**

**R4-2210795 CR on RedCap FR2**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Ericsson, Sony*

**Abstract:**

CR to remove the bracket

**Decision: Endorsed.**

##### 9.19.2.3 Others

#### 9.19.3 RRM core requirements

**[103-e][214] NR\_redcap\_RRM\_1, AI 9.19.3, 9.19.3.1, 9.19.4 – Santhan Thangarasa**

**R4-2210286 Email discussion summary for [103-e][214] NR\_redcap\_RRM\_1**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210483 (from R4-2210286).**

**R4-2210483 Email discussion summary for [103-e][214] NR\_redcap\_RRM\_1**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210592 | WF on RedCap RRM requirements | Ericsson |  |
| R4-2210593 | LS on CGI reading delay for RedCap… | Ericsson | To: RAN\_2; Cc: RAN\_Y |
| R4-2210594 | LS on measurement capability for RedCap | CMCC | To: RAN2, Cc: RAN\_1 |
| R4-2210595 | Test case list for RedCap RRM performance part | Ericsson |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** |  | **Title** | **Source** | **Status** | **Comments** |
| [R4-2209048](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209048.zip) | R4-2211037 | Draft CR to TS 38.133 on definitions and applicability for RedCap | Nokia, Nokia) Shanghai Bell | Revised | Take into account the comments provided for [R4-2208975](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208975.zip). |
| [R4-2208975](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208975.zip) |  | Draft CR on applicability rule of requirements for Redcap UE | Huawei, Hisilicon | Return to | Merged to [R4-2209048](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209048.zip) |
| [R4-2209908](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209908.zip) | R4-2211038 | Draft CR on RRC\_IDLE mode requirements for RedCap for TS 38.133 | Ericsson | Revised | Take into the comments provided for [R4-2209045](https://protect2.fireeye.com/v1/url?k=31323334-501d5122-313273af-454445555731-c538c47baa7f5b22&q=1&e=b81b9380-88ce-4b92-9ea6-03f035a91668&u=https%3A%2F%2Fwww.3gpp.org%2Fftp%2FTSG_RAN%2FWG4_Radio%2FTSGR4_103-e%2FDocs%2FR4-2209045.zip) and [R4-2208275](https://protect2.fireeye.com/v1/url?k=31323334-501d5122-313273af-454445555731-d0984b99c768a068&q=1&e=b81b9380-88ce-4b92-9ea6-03f035a91668&u=https%3A%2F%2Fwww.3gpp.org%2Fftp%2FTSG_RAN%2FWG4_Radio%2FTSGR4_103-e%2FDocs%2FR4-2208275.zip) |
| [R4-2209909](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209909.zip) | R4-2211039 | Draft CR on SDT requirements for RedCap for TS 38.133 | Ericsson | Revised |  |
| [R4-2208977](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208977.zip) | R4-2211040 | Draft CR on mobility requirements for Redcap UE | Huawei, Hisilicon | Revised |  |
| [R4-2209043](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209043.zip) | R4-2211041 | Draft CR to TS 38.133 Corrections on mobility requirements for RedCap | Nokia, Nokia Shanghai Bell | Revised |  |
| [R4-2208109](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208109.zip) | R4-2211042 | Draft CR on timing requirements for RedCap UE | Xiaomi | Revised | Take into account the changes and comments provided for [R4-2209701](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209701.zip)  And [R4-2210176](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210176.zip) |
| [R4-2209701](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209701.zip) |  | Draft CR Correction on timing requirements for RedCap UEs | Nokia, Nokia Shanghai Bell | Merged | Merged to [R4-2208109](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208109.zip) |
| [R4-2210176](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210176.zip) |  | Draft CR on UE transmit timing requirements in RedCap | Ericsson | Merged | Merged to [R4-2208109](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208109.zip) |
| [R4-2208394](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208394.zip) | R4-2211043 | Draft CR to 38.133 introducing RedCap requirements on active BWP switch delay, active TCI state switching delay and UE specific CBW change | CMCC | Revised |  |
| [R4-2209910](https://protect2.fireeye.com/v1/url?k=31323334-501d5122-313273af-454445555731-bfef6aab4e9813cf&q=1&e=bde0fa49-c713-4108-9ad0-46ef1486a267&u=https%3A%2F%2Fwww.3gpp.org%2Fftp%2FTSG_RAN%2FWG4_Radio%2FTSGR4_103-e%2FDocs%2FR4-2209910.zip) | R4-2211044 | Draft CR on uplink spatial relation requirements for RedCap for TS 38.133 | Ericsson | Revised |  |
| [R4-2209770](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209770.zip) | R4-2211045 | DraftCR on reduced capability Ues for RLM for RedCap | MediaTek inc. | Revised | The new changes in the CR should be based on Big CR which was endorsed at last meeting with revision mark. Without revision marks for the additional changes, it is difficult for companies to see the new changes. |
| [R4-2209046](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209046.zip) |  | Draft CR to TS 38.133 Signalling characteristics for RedCap | Nokia, Nokia Shanghai Bell | Merged | Merged to [R4-2209770](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209770.zip) |
| [R4-2209445](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209445.zip) | R4-2211046 | draftCR on inter-RAT NR measurement for RedCap | Ericsson | Revised |  |
| [R4-2209771](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209771.zip) | R4-2211048 | DraftCR on reduced capability Ues for general measurements and intra-frequency | MediaTek inc. | Revised | Take into account the changes in [R4-2209040](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209040.zip) |
| [R4-2209772](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209772.zip) | R4-2211049 | DraftCR on reduced capability Ues for inter-frequency and inter-RAT measurements | MediaTek inc. | Revised | Take into account the changes in [R4-2209040](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209040.zip) as per worksplit. |
| [R4-2209040](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209040.zip) |  | Draft CR to TS 38.133 Measurement procedures for RedCap | Nokia, Nokia Shanghai Bell | Merged | Merged to [R4-2209771](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209771.zip) and [R4-2209772](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209772.zip) as per worksplit. |
| [R4-2209915](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209915.zip) |  | Draft CR on side conditions on RRM requirements applicability for RedCap | Ericsson | Endorsed |  |
| [R4-2209911](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209911.zip) | R4-2211050 | WI workplan for RedCap for RRM performance part | Ericsson | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revsied to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210592 |  | WF on RedCap RRM requirements | Ericsson | Approved | Capture new agreements in GTW |
| R4-2210593 |  | LS on CGI reading delay for RedCap… | Ericsson | Approved | To: RAN\_2; Cc: RAN\_Y |
| R4-2210594 |  | LS on measurement capability for RedCap | CMCC | Approved | To: RAN2, Cc: RAN\_1 |
| R4-2210595 |  | Test case list for RedCap RRM performance part | Ericsson | Approved |  |
| R4-2211037 |  | Draft CR to TS 38.133 on definitions and applicability for RedCap | Nokia, Nokia) Shanghai Bell | Endorsed |  |
| [R4-2208975](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208975.zip) |  | Draft CR on applicability rule of requirements for Redcap UE | Huawei, Hisilicon | Not pursued |  |
| R4-2211038 |  | Draft CR on RRC\_IDLE mode requirements for RedCap for TS 38.133 | Ericsson | Endorsed |  |
| R4-2211039 |  | Draft CR on SDT requirements for RedCap for TS 38.133 | Ericsson | Endorsed |  |
| R4-2211040 |  | Draft CR on mobility requirements for Redcap UE | Huawei, Hisilicon | Endorsed |  |
| R4-2211041 |  | Draft CR to TS 38.133 Corrections on mobility requirements for RedCap | Nokia, Nokia Shanghai Bell | Not pursued |  |
| R4-2211042 |  | Draft CR on timing requirements for RedCap UE | Xiaomi | Endorsed |  |
| R4-2211043 |  | Draft CR to 38.133 introducing RedCap requirements on active BWP switch delay, active TCI state switching delay and UE specific CBW change | CMCC | Endorsed |  |
| R4-2211044 |  | Draft CR on uplink spatial relation requirements for RedCap for TS 38.133 | Ericsson | Endorsed |  |
| R4-2211045 |  | DraftCR on reduced capability Ues for RLM for RedCap | MediaTek inc. | Endorsed |  |
| R4-2211046 |  | draftCR on inter-RAT NR measurement for RedCap | Ericsson | Endorsed |  |
| R4-2211048 | R4-2211215 | DraftCR on reduced capability Ues for general measurements and intra-frequency | MediaTek inc. | Endorsed |  |
| R4-2211049 | R4-2211216 | DraftCR on reduced capability Ues for inter-frequency and inter-RAT measurements | MediaTek inc. | Endorsed |  |
| R4-2211050 |  | WI workplan for RedCap for RRM performance part | Ericsson | Approved |  |

**R4-2210592 WF on RedCap RRM requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Approved.**

**R4-2210593 LS on CGI reading delay for RedCap**

*Type: LSout For: Approval  
 Source: Ericsson*

**Decision: Approved.**

**R4-2210594 LS on measurement capability for RedCap**

*Type: other For: Approval  
 Source: CMCC*

**Decision: Approved.**

**R4-2210595 Test case list for RedCap RRM performance part**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Approved.**

**GTW on May-11**

**Timing:**

**Issue 3-1-1: Whether SSB has to be in UE active BWP for meeting the UE transmit timing requirements**

Background: Following was agreed in R4-2120418: *“RedCap UE shall meet the existing transmit timing requirements defined in section 7.1 in TS 38.133.”*

In section 7.1 in 38.133, there is following statement: *“The UE shall meet the Te requirement for an initial transmission provided that at least one SSB is available at the UE during the last 160 ms.”*

Following was agreed at RAN4#102-e: *“Type of SSB used to meet the UE transmit timing requirements can be CD-SSB or NCD-SSB.”*

* Proposals
* **Option 1 (Xiaomi, CATT, CMCC, ZTE, HW, Apple):**Redcap UE should meet the existing Te and Tq requirements provided that the SSB is available at the UE at least once every 160 ms regardless whether SSB is in active BWP.
* **Option 2 (CATT, Ericsson):** Te requirements are met under any of the following scenarios:
  + - * SSB is in the UE’s active BWP, or
      * SSB is not in the UE’s active BWP (RedCap BWP) but the following condition is met:
        + UE’s active BWP(RedCap BWP) and initial BWP are within X MHz for FR1, or within Y MHz for FR2. X and Y are FFS.
        + (Ericsson): Values of X and Y above are 20 MHz and 100 MHz respectively.
* **Option 3 (Intel):** The RedCap UE shall meet the existing Te and Tq requirements for corresponding FR and SCS defined in section 7.1 of TS 38.133 provided that SSB is available at the UE at least once every 160 ms under the following conditions:
  + - * the CD-SSB or NCD-SSB is within the RedCap UE’s active BWP or
      * the CD-SSB outside of  UE’s active BWP and RedCap UE access it through measurement gap
* **Option 4 (OPPO, Nokia, MTK, vivo, Intel, QC):** Redcap UE should meet the existing Te and Tq requirements provided that the SSB is available at the UE at least once every 160 ms and the SSB is in active BWP.
* **Option 4a (Nokia):**
  + - * Tx timing requirements for RedCap devices are based on UE’s supporting FG 6-1 operation, which require CD-SSB or NCD-SSB presence in the active DL BWP.
      * it is not expected that RedCap UE will be able to cope with a scenario where the SSB is located outside the maximum RedCap BW, that covers the active BWP.
* Recommended WF

**Discussion:**

Ericsson: We can support Option 1. Option 2 is compromise. Disagree with Option 4.

Vivo: we need look back at the legacy requirements. In the existing requirements, the SSB should be available. There is no discussion at all for the case whether SSB is the BWP or not. There are different UE capabilities. BWP with SSB is the baseline for all the requirements. For legacy UE, the requirement should be applied on the condition that SSB should be within BWP. Option 2 is not a good compromise.

Mediatek: support Option 4. The same comment as Vivo. The previous agreement is that no requirement for BWP without SSB.

Qualcomm: support option 4. Agree with vivo mention. We do not understand how UE meets the requirement without SSB in BWP and without gap. This is different from legacy scenario. UE has meet the uplink timing when SSB is available.

CMCC: Support Option 1. We do not need to discuss whether SSB is in BWP or not. How the SSB is available is not relevant. Feature group 6-1a can be supported by UE with RF retuning. We do not need spend too much time on it.

Huawei: we support Option 1. If UE supports 6-1a wihout CSI-RS, which means there is no SSB within BWP. If we agree on Option 4, there will be restriction on network.

Apple: Support Option 1. It is up to UE implemetnaion either use CSI-RS or SSB.

ZTE: support Option 1. It is UE implementation issue.

Nokia: we support Option 4. For Option 1, we think Option 1 adds the complexity for RedCap UE. We should also consider the situation that RAN1 agreed for feature 6-1, which is mandatory feature. If the condition is not met, the operation of feature group 6-1 would not be possible.

CATT: We prefer Option 1. We do not need to limit SSB must be in the BWP.

Qualcomm: we want to CSI-RS for sync is optional. SSB is mandatory feature. The requirement should be defined only for SSB.

Apple: UE should base on the CSI-RS to perform the timing.

**Discussion points:** For core requirement, Redcap UE should meet the existing Te and Tq requirements provided that the SSB is available at the UE at least once every 160 ms on the condition that

* The SSB should be within active BWP, or
* The SSB is not within active BWP, and the gap is configured
* FFS how to capture the above two sub-bullets in the specification

**Agreements:** For core requirement, Redcap UE should meet the existing Te and Tq requirements provided that the SSB is available at the UE at least once every 160 ms on the following conditions that

* The SSB should be within active BWP, or
* The SSB is not within active BWP, and the gap is configured
* Capture the condition in the section for RedCap timing of the specification

**Handover:**

**Issue 2-1-2: Potential Scenarios for HO**

* Proposals
* Scenario 1: HO directly to a RedCap specific BWP with NCD-SSB and RACH resource (no CD-SSB)
* Scenario 1a: HO directly to a RedCap specific BWP with NCD-SSB and RACH resource without measurement (unknown cell)
  + - * **Support: MTK, HW, Ericsson, Xiaomi, QC**
      * **Not support: Apple, Nokia, CMCC**
* Scenario 2:   HO to an initial BWP with CD-SSB but RACH on RedCap specific BWP associated with NCD-SSB
  + - * **Support: Apple, HW, Ericsson, Xiaomi, Nokia, CMCC**
      * **Not support: MTK, QC**
* Scenario 2a: HO to an initial BWP with CD-SSB but RACH on RedCap specific BWP associated with CD-SSB
  + - * **Support: Apple, HW, CMCC**
      * **Not support: Ericsson, Xiaomi, Nokia, MTK, QC**
* Scenario 3: HO to an initial BWP with CD-SSB but RACH on RedCap specific BWP with no SSB
  + - * **Support: Apple, HW, Ericsson, Xiaomi, Nokia, CMCC**
      * **Not support: MTK, QC**
* Scenario 4: HO to a BWP which has different SSB with the one used for measurement
  + - * **Note: Companies think this scenario is a general case, and can happen in all above scenarios**
      * **Support: HW, Ericsson, Xiaomi, Nokia, CMCC, QC**
      * **Not support: Apple,**
* **Recommended WF**

RAN4 to discuss which scenarios should define requirements in Rel-17

**Issue 2-1-4: Requirements for HO directly to a RedCap specific BWP with NCD-SSB only without measurement (Scenario 1a)**

* Proposals
* **Option 1 (E///):** When NW configures UE handover to the target unknown cell, and configures multiple SSBs’ information,
  + - * UE should choose the SSB within the target active BWP or separating to the target BWP no larger than 20 MHz (for FR1) or 100 MHz (for FR2).
      * Otherwise, additional handover delay(Trs) is expected.
* Recommended WF
* Moderator understands that this issue is pending on the conclusion of issue 2-1-2. However, as this is the last Rel-17 core meeting, please provide your view based on the assumption of handover to a RedCap specific BWP with NCD-SSB is agreed, instead of just saying “Wait for the conclusions of Issue 2-1-2” or ”Wait for RAN2’s feedback”. Commenting in this Issue does not mean you agree with scenario 1a in issue 2-1-2.

**CONNECTED mode measurements:**

**Issue 5-1-3: Reference SSB to decide measurement type (intra- or inter-frequency)**

* Proposals
* **Option 1 (CATT, CMCC, ZTE, E///, HW, Apple):** NW indicates the reference SSB (CD-SSB or fixed NCD-SSB)
* **Option 1a (CATT, CMCC, Apple, E///):** The SSB indicated in serving cell MO is used as reference SSB (CD-SSB or NCD-SSB)
* **Option 1b (E///):** if the NW indicates NCD-SSB for measurement, then NCD-SSB is used as reference. Otherwise, CD-SSB is used as reference.
* **Option 1c (HW):** Reference SSB to decide intra-frequency measurement is supposed to be fixed, and it is not expected to be changed with active BWP switching.
* **Option 2 (OPPO, QC, vivo):** SSB are in active BWP is used as reference either NCD-SSB or CD-SSB are presented in active BWP.
* **Option 3 (CMCC):** CD-SSB of the serving cell
* **Option 4 (Nokia, Xiaomi):**
  + - * If only one SSB is indicated in serving cell MO, either CD-SSB or NCD-SSB, this SSB is used as reference SSB for the definition of intra-frequency measurements.
      * If both NCD-SSB and CD-SSB are configured in the MO, FFS how UE to decide reference for serving cell measurements, the UE shall use as reference the SSB within its active BWP.
* Recommended WF
* Moderator understands that this issue is pending on the conclusion of RAN2 LS. However, as this is the last Rel-17 core meeting, please provide your view instead of just ”Wait for RAN2’s feedback”.

**Discussions:**

ZTE: agree with moderator. Can we agree option 1 and then solve the other issue?

Huawei: agree with Option 1.

Vivo: this depends on RAN2 discusison. RAN2 is designing the serving cell and MO and also there is on-going discussion on how measurement on serving cell. It is strange for UE to measurement the SSB outside BWP. We support option 2.

Mediatek: SSB should be in the BWP. We share the comment from VIVO.

Ericsson: Support Option 1. I wonder if in the current specification, UE can do the measurement with SSB in BWP or outside BWP. We are talking about the definition of intra-frequency. Based on option2, how can we define the itnra-frequency measurement?

CMCC: we should have definition to cover all the cases in generic way. For the inter-and intra measurement, we have different conditions. We can ask RAN2 to desing the signaling to support it.

Nokia: the discussion depends on RAN2. We did not get response from RAN2.

Qualcomm: support option 2. It does not define the SSB outside BWP. If we use the SSB outside active BWP, it should be consider as itner-frequency case.

Apple: support option 1 and 1a. We do not want to define the dynamic inter-and intra-frequency measurement.

OPPO: support option 2.

Xiaomi: We support Option 4. The discussion needs Ran2 progress.

ZTE: we can use option 4 as baseline.

CATT: we have the same concern as Ericsson. OK to option 1 and 1a.

Huawei: we cannot agree on the secton bullet of option 4. We should avoid the dynamic definition. Inter-frequency can be also without gap.

Vivo: for inter-f measurement, the assumption is that there is no SSB of serving cell on the frequency layer for inter-f. In that case the side condition is higher. If we still follow the inter-frequency, the performance will degrade. Dynamic changing of inter and intra should not be a concern.

Ericsson: how to handle the definition for UE supporting SSB ouside BWP. How to consider it.

Mediatek: In Rel-15 discussion, the simple principle if UE can mesuare on a frequency layer at the same time with serving cell, that frequency layer is the intra-frequency. If UE is configured with 4 BWPs, UE can always measurement serving cell at the same time. Then all the 4 BWPs should be intra-freqeuncy. We can decouple the intra-freqeuncy and SSB to be measured.

**Agreement:** Depending on RAN2 design

* If only one SSB is indicated in serving cell MO, either CD-SSB or NCD-SSB, this SSB is used as reference SSB for the definition of intra-frequency measurements.
* If both NCD-SSB and CD-SSB are configured in the serving cell MO(s), which depends on RAN2 design, FFS on how UE to determine reference SSB for definition of intra-frequency measurements.

**Agreement:**

* FFS on whether UE needs measure one SSB or multiple SSBs configured in the serving cell MO(s)

**Issue 5-2-1: Inter-frequency without gap with capability**

Moderator’s note: To avoid the misunderstanding on the discussion about inter-frequency without gap, it’s important to clarify the scenarios firstly. To facilitate the discussion, the scenarios and figure in tdoc R4-2208980 are reused.

* Case 1: If the intra-frequency measurement definition is based on fixed centre frequency of reference SSB where the reference SSB is indicated as NCD-SSB, MO#1 is an inter-frequency layer which is not overlapping with the serving cell’s SSB. MO#1 falls into UE active BWP.
* Proposals
* **Option 1 (Xiaomi, vivo, OPPO, ZTE, MTK, Apple):** RedCap UE won’t support ‘Inter-frequency without gap’ measurement capability in Rel-17.
* **Option 2 (CMCC):** RAN4 needs to consider ‘inter-frequency without MG’ capability when defining RedCap RRM requirements.
* **Option 3 (E///):** RAN4 to not discuss the ‘Inter-frequency without gap’ measurement capability in Rel-17.
* Recommended WF
* Given that topic has been discussed several meetings without progress and taking into account the company views and fact that this is the last meeting, option 1 will be agreed if no consensus reached in the 1st round.

**Discussions:**

CMCC: This proposal is proposed from the begininig. This issue has not discussed in GTW. There is no technical feedback. This feature does not require additional RF chain. There is no additional UE effort to do so. This feature is related to definition of measurement type. If only one SSB is configured in MO, we will have case the active BWP contains the neighbor cell SSB rather than for serving cell. The requirement for intra-f can be reused for inter-frequency without gap.

Nokia: support option 1. This feauture will increase the complexity.

Mediatek: Support option 1. To CMCC, we provided the technical response. In spec, CA capable UE is not expected to report supporting …

CMCC: to Mediatek, when discussing the Rel-16, we discuss the CA capable or non-CA capable UE. There is no redcap UE. We assume all the UEs are CA. It is not the case we design the requirement for CA capable UE only. We can reuse the requirement in Rel-16.

Vivo: we are not sure about the use case of inter-frequency without gap for redcap UE.

Nokia: we have previous agreement that CA and DC are not supported in Rel-17.

Mediatek: we propose to capture it in the CR R4-2207095\_rev2.

**Agreement:** Resue the existing ‘inter-frequency without MG’ capability signaling for redcap UE, and further discuss how to specify the requirements for UE supporting redcap and signaling of inter-frequency without MG in the future.

**Issue 5-2-2: Inter-frequency without gap without capability**

Moderator’s note: To avoid the misunderstanding on the discussion about inter-frequency without gap, it’s important to clarify the scenarios firstly. To facilitate the discussion, the scenarios and figure in tdoc R4-2208980 are reused.

* Case 2: If the intra-frequency measurement definition is based on fixed centre frequency of reference SSB where the reference SSB is indicated as NCD-SSB, MO#2 is an inter-frequency measurement. The SSB in MO#2 is overlapping with CD-SSB in serving cell and falls in UE active BWP.
* Proposals:
* **Option 1 (HW):** MO#2 is expected to be measured without gap without capability.
* Recommended WF
* Moderator understands that this issue is pending on the conclusion of issue 5-1-3, 5-1-4. However, as this is the last Rel-17 core meeting, please provide your view, instead of just saying “Wait for the conclusions of Issue 5-1-3” or ”Wait for RAN2’s feedback”. Commenting in this Issue does not mean you agree with option 1 in issue 5-1-3.

**Issue 5-2-4: CSSF outside gap**

* Proposals
* **Option 1 (Xiaomi, vivo, OPPO, ZTE, MTK, Apple):** CSSFoutside\_gap,i = 1 for RedCap UE measurement outside gap based on Rel-15 requirement.
* **Option 2 (CMCC):** 
  + - * CSSFoutside\_gap,i =1, if only one MO is configured to be measured outside of MG for RedCap. The MO can be either intra-frequency MO without gap or inter-frequency MO without gap,
        + Otherwise, CSSFoutside\_gap,i =2 for intra-frequency measurement, and CSSFoutside\_gap,i = 2\*Y for inter-frequency MO with no measurement gap, Y is the number of configured inter-frequency MOs without MG.
        + Note: Only inter-frequency MOs without MG when none of the SMTC occasions of this inter-frequency measurement object are overlapped by the measurement gap are measured outside of MG
* Recommended WF
  + Given that topic has been discussed several meetings without progress and taking into account the company views and fact that this is the last meeting, option 1 will be agreed if no consensus reached in the 1st round.

**BFD**

**Issue 4-1-1: SSB-based based BFD: evaluation period for FR1**

* Proposals
* **Option 1 (vivo, ZTE, HW, Nokia, E///, Xiaomi):** No need to extend the evaluation period for BFD compared to legacy evaluation period.
* **Option 2 (OPPO, MTK, Apple, E///, QC):** Evaluation period is extended by a factor of 2 for 1 Rx UE
* **Option 2a (OPPO)**: Also the lower bound for SSB based BFD can be extended by a factor of 2 for 1 Rx UE
* Recommended WF
* Companies are encouraged to check the SNR levels for which the BFD requirements are defined, i.e. if they are similar to RLM out-of-sync.
* If SNR level of BFD is higher than RLM out-of-sync SNR, then check if companies can agree to option 1.
* If similar SNR level of BFD is similar to RLM out-of-sync SNR, then can companies agree to option 2.

**Discussions**

Mediatek: BFD requirement is for out-of-sync. BFD has more samples compared to RLF. We should increase the BFD evaluation period given that the RLF evaluation is extended. We prefer Option 2.

Vivo: we are OK with recommended WF.

Huawei: Regarding SNR, BFD Qout is higher than Qout of RLM. From our simulation, we support Option 1.

OPPO: Support Option 2. The BFD is also extended.

Qualcomm: Option 2. The problem is that in the previous meeting the BFD should follow RLM requirement.

Nokia: we are OK with the recommended WF.

Mediatek: SNR value, one of cases highlighted in Ericsson, you can see BFD SNR is -15dB. SNR is difficult to be used to judge. We prefer following the same framework.

Huawei: for 1Rx UE, the SNR is the same as 2Rx UE to meet the coverage. For BFD we should consider SNR -6dB.

**Agreement:** Evaluation period is extended by a factor of 2 for 1 Rx UE.

**CGI reading:**

**Issue 5-7-1: SIB1 decoding delay for CGI reading**

* Proposals
* **Option 1 (E///, HW):** 10 samples are needed for 1Rx RedCap UE to achieve the SIB1 90% successful rate.
* **Option 2 (MTK, Apple):** 12 samples are needed for 1Rx RedCap UE to achieve the SIB1 90% successful rate.
* Recommended WF
* Discuss possible compromise options.

**Discussion:**

Ericsson: our simulation results show 6 samples.

Qualcomm: we support option 2.

**Agreement:** 12 samples are needed for 1Rx RedCap UE to achieve the SIB1 90% successful rate.

**GTW on May 13**

**Issue 2-1-3: Requirements for directly HO to a RedCap specific BWP with NCD-SSB or CD-SSB (Scenario 1)**

* Proposals
* **Option 1 (Xiaomi):** Legacy requirements are reused.
* **Option 1a (Intel):** Reuse legacy HO requirements for hadover to RedCap specific BWP with NCD-SSB except Tsearch relaxation from 1 Rx reception.
* Recommended WF
* Moderator understands that this issue is pending on the conclusion of issue 2-1-2. However, as this is the last Rel-17 core meeting, please provide your view based on the assumption of handover to a RedCap specific BWP with NCD-SSB is agreed, instead of just saying “Wait for the conclusions of Issue 2-1-2” or ”Wait for RAN2’s feedback”. Commenting in this Issue does not mean you agree with scenario 1 in issue 2-1-2.
* Recommended WF
* *Need more discussion*

Agreement: Agree Option1a for scenario 1, on the condition that RAN2 specifies the scenario 1.

* Reuse legacy HO requirements for hadover to RedCap [first active] BWP with NCD-SSB except Tsearch relaxation from 1 Rx reception.
  + RAN4 assume that the RACH occasion is configured with the [first active] BWP

**Issue 2-1-7: Requirements for HO to an initial BWP with CD-SSB but RACH on RedCap specific BWP with no SSB (Scenario 3)**

* Proposals
* **Option 1 (CMCC, HW, Apple, QC, E///, Intel, Xiaomi):** For the case that UE handover to a target cell’s initial BWP and further switch to the specific RedCap BWP without NCD-SSB to send the RACH, handover interruption requirements can be defined as:
  + - * Tinterrupt = Tsearch + TIU + Tprocessing + T∆ + Tmargin + TBWP-switching-delay ms
        + TBWP-switching-delay is FFS
        + T∆ is FFS
        + CD-SSB is used for identification of target cell
* **Option 1a (Intel):** In addition, Tsearch should be relaxed from 1 Rx reception.
* **Option 2 (vivo, OPPO):** Handover to that RedCap specific BWP is supported but no requirement applies.
* Recommended WF
* Moderator understands that this issue is pending on the conclusion of issue 2-1-2. However, as this is the last Rel-17 core meeting, please provide your view based on the assumption of handover to a RedCap specific BWP with NCD-SSB is agreed, instead of just saying “Wait for the conclusions of Issue 2-1-2” or ”Wait for RAN2’s feedback”. Commenting in this Issue does not mean you agree with scenario 3 in issue 2-1-2.
* Given this is the last meeting and taking into account the number supporting companies for option 1, check if option 1 can be agreed.

**Issue 1-2-2: NR frequency band grouping for FR2 RedCap**

* Proposals
* **Option 1 (MTK):** Support defining the bandgroups for FR1 and FR2 in RAN4 RRM.
* **Option 1a (E///):** RAN4 to capture the band groups for which RRM requirements apply in Annex B1 and B2 for IDLE and CONNECTED mode respectively.
* **Option 2 (CMCC):** Do not introduce new tables of frequency band groups for RedCap.
* Recommended WF
* Companies to provide comments to the CR [R4-2209908, change #2] directly.
* Companies to confirm if following can be agreed:
  + - * For FR1 no change to existing frequency band grouping table
      * For FR2, the existing tables are updated to include PC7 for n257, n258 and n267 as per RF agreement.

**Issue 1-3-1: SDT for RedCap with 1 Rx – time window for FR1 and FR2**

* Proposals
* **Option 1 (vivo, OPPO, MTK):** Support reusing the TA validation requirements from SDT rel-17 WI to SDT for RedCap in rel-17 with relaxed accuracy performance for the case of 1Rx RedCap.
* **Option 2 (HW, E///):** Time windows defining the valid measurements used for TA validation are reused from Rel-17 SDT.
* Recommended WF
* Discuss the options. Proponents of option 1, explain what is meant by “relaxed accuracy performance” in option 1 compared to what is agreed in the SDT for legacy UEs.

Companies to confirm if following can be agreed:

* A) If NR SDT requirements (other Rel-17 SDT WI) include references to 2 Rx measurement accuracy requirements, they shall be updated to point to corresponding 1 Rx measurement accuracy requirements.

**Issue 5-3-1: How much to extend the PSS/SSS detection delay for FR1**

*Background: It was agreed to increase the number of attempts for PSS/SSS detection for 1 Rx RedCap UE in FR1, see R4-2202670. Under this issue it is discussed how much (nr of attempts) to relax.*

* Proposals
* **Option 1 (Apple):** By 2 SMTC window as follows:
  + - * non-DRX delay requirement: max( 600ms, ceil( 7 x Kp) x SMTC period ) x CSSFintra
* **Option 2 (vivo, OPPO, HW, Nokia, MTK, E///):** 1 sample
* **Option 3 (QC):** By 3 samples to a total of 8 samples
  + - * (2 for AGC and 6 samples for detection)
* Recommended WF
* Given that topic has been discussed for last several meetings and taking into account the fact that this is the last meeting, can companies compromise to option 2 which has the majority support?
* Since it is the last meeting and this issue belongs to the core part, companies are encouraged to compromise to option 1 which is a middleground between option 2 and 3. Can companies confirm if this WF is acceptable?

**Issue 5-4-1: How much to extend time index delay in FR1 (PBCH-DMRS detection)**

Background: At last meeting it was agreed to extend time index delay in FR1.

* Proposals
* **Option 1 (E///):** by 1 sample compared to legacy requirements
* **Option 2 (vivo, Nokia, Apple):** by 2 samples/SMTC, i.e. total 5 samples.
* **Option 3 (vivo, HW, QC):** by 3 samples/SMTC, i.e. total 6 samples.
* Recommended WF
* Given that topic has been discussed previously and taking into account the fact that this is the last meeting, can companies compromise to option 2?
* Since it is the last meeting and this issue belongs to the core part, companies are encouraged to compromise to option 2 which is a middleground between option 1 and 3. Can companies confirm if this WF is acceptable?

**GTW on May 20**

**Intra-frequency definition(related to 5-1-3, 5-1-4) (Need to confirm following)**

* The centre frequency of the reference SSB of the serving cell and the centre frequency of the SSB of the neighbour cell are the same, and the subcarrier spacing of the two SSBs are also the same. The reference SSB is the SSB defined in BWP-specific *servingCellMO* under *BWP-DownlinkDedicated* of active DL BWP. If the field is absent , the reference SSB is the SSB defined in *servingCellMO*under *ServingCellConfig*.

**Agreement:** The centre frequency of the reference SSB of the serving cell and the centre frequency of the SSB of the neighbour cell are the same, and the subcarrier spacing of the two SSBs are also the same. The reference SSB is the SSB defined in BWP-specific *servingCellMO* under *BWP-DownlinkDedicated* of active DL BWP. If the field is absent , the reference SSB is the SSB defined in *servingCellMO*under *ServingCellConfig*.

**Inter-frequency wo gap requirement**

RAN4 Agreement in last week:

***Agreement:*** *Resue the existing ‘inter-frequency without MG’ capability signaling for redcap UE, and further discuss how to specify the requirements for UE supporting redcap and signaling of inter-frequency without MG in the future.*

* **Option 1(CMCC, Huawei, Apple, Ericsson, vivo, QC, Oppo)**: Define the requirement based on the following update.
* CSSFoutside\_gap,i =1, if only one MO is configured to be measured outside of MG for RedCap. The MO can be either intra-frequency MO without gap or inter-frequency MO without gap,
  + Otherwise, CSSFoutside\_gap,i =2 for intra-frequency measurement, and CSSFoutside\_gap,i = 2\*Y for inter-frequency MO with no measurement gap, Y is the number of configured inter-frequency MOs without MG.

Note: Only inter-frequency MOs without MG when none of the SMTC occasions of this inter-frequency measurement object are overlapped by the measurement gap are measured outside of MG

* **Option 1a(vivo)**: Limit Y = 1.
* **Option 2(MTK)**: Don’t support to define requirement for ‘inter-frequency without MG’.

**Discussion**

Moderator: in first round we agree to reuse te requirement without gap. Whether to define the requirement or not is not simple. The majority companies prefer to define the requirement. One company prefer not to define.

Vivo: it is not critical to consider more than 1. Considering 30KHz SCS, the measurement bandwidth is more than 7MHz. There is no room to consider Y > 1.

CMCC: For number of Y, we need to define the requirement compatible with all the scenarios. How to share the searchers between MOs. It is possible to configure multiple MOs. The Option 1 is flexible enough. We do not define the additional requirement to satisfy the requirement with Y > 1.

Vivo: It is not critical to have multiple inter-frequency layers. If network configures multiple layers, one is within BWP and others are not outside BWP. It is over specified requirement.

Moderator: it seems that we are discussing the exact the requirement.

Mediatek: We are OK to compromise.

Vivo: we need justify the scenario. Otherwise there is overlapped SSB in the frequency domain. It is not expected from UE perspective.

Nokia: we are OK with the agreement on the requirement. With 15Khz, it would be possible to deploy.

Ericsson: We have the same view as Nokia. It is still possible with 15Khz and it is also possible with 30KHz. It is better to have some compatibility in the future. There is no harm to UE. The delay would be the same.

CMCC: We agree with Ericsson and Nokia. To vivo, do you expect the different requirement with Y >1? If Y can be larger than 1 but we only define the requirement with Y=1, then there will be confusion in the future.

Vivo: The partial overlapping SSB. For one frequency layer, the SSB is aligned which is the typical case. The other frequency layer would be far away from this frequency layer.

**Agreement:** Define the requirement for Inter-frequency wo gap based on the following update.

* CSSFoutside\_gap,i =1, if only one MO is configured to be measured outside of MG for RedCap. The MO can be either intra-frequency MO without gap or inter-frequency MO without gap,
* Otherwise, CSSFoutside\_gap,i =2 for intra-frequency measurement, and CSSFoutside\_gap,i = 2\*Y for inter-frequency MO with no measurement gap, Y is the number of configured inter-frequency MOs without MG.

Note: Only inter-frequency MOs without MG when none of the SMTC occasions of this inter-frequency measurement object are overlapped by the measurement gap are measured outside of MG

**Assumption on searcher**

Candidate options:

* **Option 1 (CMCC, Huawei, Apple, Ericsson, vivo, QC, Oppo):** For RedCap UE, one searcher shall be shared with all frequency layers which are measured without gap.
* **Option 2 (MTK):**
* The searcher will be exclusively used by intra-frequency without gap measurement provided that RAN4 agrees that RedCap UE does NOT support ‘Inter-frequency without gap’ measurement capability in Rel-17.

**Agreement:** Agree on Option 1.

**CSSF outside gap**

Candidate options:

* **Option 1(CMCC, Huawei, Apple, Ericsson, vivo, QC, Oppo):**
* Define the requirement based on the following update.
  + CSSFoutside\_gap,i =1, if only one MO is configured to be measured outside of MG for RedCap. The MO can be either intra-frequency MO without gap or inter-frequency MO without gap,
    - Otherwise, CSSFoutside\_gap,i =2 for intra-frequency measurement, and CSSFoutside\_gap,i = 2\*Y for inter-frequency MO with no measurement gap, Y is the number of configured inter-frequency MOs without MG.
    - Note: Only inter-frequency MOs without MG when none of the SMTC occasions of this inter-frequency measurement object are overlapped by the measurement gap are measured outside of MG
* **Option 2 (MTK):** CSSFoutside\_gap,i = 1 for RedCap UE measurement outside gap based on Rel-15 requirement.

**Agreement:** Agree on Option 1.

-------------------------------------------------------------------------------------------------------------------------------------------

**[103-e][215] NR\_redcap\_RRM\_2, AI 9.19.3.2, 9.19.3.3, 9.19.3.4 – Xusheng Wei**

**R4-2210287 Email discussion summary for [103-e][215] NR\_redcap\_RRM\_2**

*Type: other For: Information  
 Source: Moderator (vivo)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210484 (from R4-2210287).**

**R4-2210484 Email discussion summary for [103-e][215] NR\_redcap\_RRM\_2**

*Type: other For: Information  
 Source: Moderator (vivo)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210596 | WF on eDRX and RRM measurement relaxations requirements for Redcap UE | vivo |  |
| R4-2210597 | Reply LS on RSRP measurement before Msg1 or MsgA retransmission | vivo | To: RAN2  Cc: RAN1 |
| R4-2210598 | Reply LS on RRM relaxation for Redcap | vivo | To: RAN2 |
| R4-2210599 | Reply LS on introduction of an offset to transmit CD-SSB and NCD-SSB at different times | Ericsson | To: RAN2  Cc: RAN1 |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2208116](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208116.zip) |  | Discussion on remaining issues for RedCap eDRX | Xiaomi | Noted |  |
| [R4-2208270](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208270.zip) |  | Considerations on remaining issues for Redcap eDRX | vivo | Noted |  |
| [R4-2208370](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208370.zip) |  | Discussion on eDRX requirements for RedCap UE | OPPO | Noted |  |
| R4-2208396 |  | On Extended DRX cycle for RedCap UE | CMCC | Noted |  |
| [R4-2208723](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208723.zip) |  | On extended DRX enhancements for RedCap | ZTE Corporation | Noted |  |
| [R4-2208981](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208981.zip) |  | Discussion on Extended DRX enhancements for RedCap UE | Huawei, Hisilicon | Noted |  |
| [R4-2208982](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208982.zip) | R4-2211051 | Draft CR on measurement requirements for Redcap UE in inactive mode | Huawei, Hisilicon | Revised |  |
| [R4-2209044](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209044.zip) |  | Discussion on eDRX enhancements for RedCap | Nokia, Nokia Shanghai Bell | Noted |  |
| [R4-2209045](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209045.zip) |  | Draft CR to TS 38.133 Correction on cell reselection requirements for RedCap | Nokia, Nokia Shanghai Bell | Merged |  |
| [R4-2209444](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209444.zip) |  | Discussions on eDRX requirements for RedCap | Ericsson | Noted |  |
| [R4-2209767](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209767.zip) |  | Extended DRX in IDLE mode and INACTIVE mode | MediaTek inc. | Noted |  |
| [R4-2209776](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209776.zip) |  | Discussion on RRM requirement with eDRX for RedCap | Apple | Noted |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** |  | **Title** | **Source** | **Status** | **Comments** |
| [R4-2208117](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208117.zip) |  | Discussion on remaining issues for RedCap RRM measurement relaxations | Xiaomi | Noted |  |
| [R4-2208271](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208271.zip) |  | Considerations on remaining issues for Redcap RRM relaxation | vivo | Noted |  |
| [R4-2208275](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208275.zip) |  | draft CR for idle state mobility for Redcap | vivo | Merged |  |
| [R4-2208371](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208371.zip) |  | RRM measurement relaxations for RedCap UE | OPPO | Noted |  |
| [R4-2208397](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208397.zip) |  | On RRM measurement relaxation for RedCap UE | CMCC | Noted |  |
| [R4-2208724](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208724.zip) |  | Discussions on RRM measurement relaxations for RedCap UEs | ZTE Corporation | Noted |  |
| [R4-2208983](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208983.zip) |  | Discussion on RRM measurement relaxations for RedCap UE | Huawei, Hisilicon | Noted |  |
| [R4-2209702](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209702.zip) |  | On RRM measurement relaxation for neighbouring cells | Nokia, Nokia Shanghai Bell | Noted |  |
| [R4-2209703](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209703.zip) |  | Draft CR Corrections to RRM measurement relaxations for RedCap | Nokia, Nokia Shanghai Bell | Merged |  |
| [R4-2209768](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209768.zip) |  | RRM measurements relaxation for stationary criterion | MediaTek inc. | Noted |  |
| [R4-2209777](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209777.zip) |  | On RRM relaxation requirement for RedCap | Apple | Noted |  |
| [R4-2209906](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209906.zip) |  | Discussions on RRM measurement relaxations | Ericsson | Noted |  |
| [R4-2210222](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210222.zip) |  | RRM relaxations enhancements for RedCap UE | Qualcomm Incorporated | Noted |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2208398](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208398.zip) |  | Reply LS on introduction of an offset to transmit CD-SSB and NCD-SSB at different times | CMCC | Noted |  |
| [R4-2208827](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208827.zip) |  | Reply LS on introduction of an offset to transmit CD-SSB and NCD-SSB at different times | vivo | Noted |  |
| [R4-2208984](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208984.zip) |  | Reply LS on introduction of an offset to transmit CD-SSB and NCD-SSB at different times | Huawei, Hisilicon | Noted |  |
| [R4-2209704](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209704.zip) |  | On timing offset between CD-SSB and NCD-SSB for RedCap | Nokia, Nokia Shanghai Bell | Noted |  |
| [R4-2209781](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209781.zip) |  | Discussion on incoming LS from other WGs | MediaTek Korea Inc. | Noted |  |
| R4-2208272 |  | Reply LS on RSRP measurement before Msg1 or MsgA retransmission | vivo | Noted |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210596 |  | WF on eDRX and RRM measurement relaxations requirements for Redcap UE | vivo | Approved |  |
| R4-2210597 |  | Reply LS on RSRP measurement before Msg1 or MsgA retransmission | vivo | Noted | To: RAN2  Cc: RAN1 |
| R4-2210598 |  | Reply LS on RRM relaxation for Redcap | vivo | Approved | To: RAN2 |
| R4-2210599 |  | Reply LS on introduction of an offset to transmit CD-SSB and NCD-SSB at different times | Ericsson | Approved | To: RAN2  Cc: RAN1 |
| [R4-2208982](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208982.zip) | R4-2211051 | Draft CR on measurement requirements for Redcap UE in inactive mode | Huawei, Hisilicon | Endorsed |  |

**R4-2210596 WF on eDRX and RRM measurement relaxations requirements for Redcap UE**

*Type: other For: Approval  
 Source: vivo*

**Decision: Approved.**

**R4-2210597 Reply LS on RSRP measurement before Msg1 or MsgA retransmission**

*Type: LSout For: Approval  
 Source: vivo*

**Decision: Noted.**

**R4-2210598 Reply LS on RRM relaxation for Redcap**

*Type: LSout For: Approval  
 Source: vivo*

**Decision: Approved.**

**R4-2210599 Reply LS on introduction of an offset to transmit CD-SSB and NCD-SSB at different times**

*Type: LSout For: Approval  
 Source: Ericsson*

**Decision: Approved.**

**GTW on May 11**

**RRM relaxation:**

**Issue 2-2-2: Principle on RRM relaxation for eDRX with PTW**

* Proposals
* Option 1: No measurement relaxation when UE is configured with eDRX cycles above 10.24 seconds (xiaomi Huawei vivo)
* Option 2: Introduce intra-/inter-frequency and inter-RAT E-UTRAN neighbour cell measurement relaxations for eDRX cycles with PTW up to eDRX cycle length of 163.84 s, whereby the UE applies the scaling factor (6) based on measurement occasions across PTWs but does not measure across PTW’s. (Nokia)
* Option 3: No need to support “The relaxed RRM measurement period for PHY filtering shall not cross different PTW windows” (MTK)
* Option 4: If Rel-16/17 relaxed measurement requirements can be applied with eDRX cycles greater than 10.24 seconds (with PTW), the relaxed RRM measurement period for PHY filtering shall not cross different PTW windows (Apple)
* Option 5: The UE is allowed to apply the agreed relaxation factor (6) for eDRX cycle up to [20.48 sec] while the UE does measurement without relaxation within PTW. When the UE has met two relaxation criteria while configured with eDRX cycles ≥ 20.48, the UE is allowed to meet the relaxed measurement requirements which allows the UE to skip the measurement up to 4 hours (Ericsson)
* Recommended WF
* Collect company’s views

Discussion:

Ericsson: Support to relax RRM requirements.

Vivo: we can discuss how to relax further.

Apple: we are considering to add principle.

Nokia: We should take Ericsson comments into consideration.

Apple: does the second bullet mean UE can relax 4 hours for measurement.

**Agreement:**

* Relax RRM requirements for eDRX with PTW

**Agreement:**

* For eDRX with PTW
* For the single relaxation criterion, if Rel-16/17 relaxed measurement requirements can be applied with eDRX cycles greater than 10.24 seconds (with PTW), the relaxed RRM measurement period for PHY filtering shall not be cross different PTW windows
  + - * Scaling factor is TBD
* For two relaxation criteria, when the UE has met two relaxation criteria, the UE is allowed to reuse the fixed long measurement period of 4 hours.
* For eDRX wihout PTW
* For two relaxation criteria, when the UE has met two relaxation criteria, the UE is allowed to reuse the fixed long measurement period of 4 hours.

**eDRX:**

**Issue 1-3-1: Inactive state requirements when idle eDRX is longer than 10.24s**

* Option 1: Measurement requirements for inactivate state (serving cell, intra/inter frequency) Redcap UE are based on inactive DRX or inactive eDRX when inactive eDRX is configured (vivo Huawei ZTE)
* Option 2: Based on the paging monitoring cycle of T agreed in RAN2 (Xiaomi oppo Nokia MTK Apple)

|  |  |  |  |
| --- | --- | --- | --- |
| IDLE eDRX[s] | Inactive eDRX[s] | Outside CN PTW or during CN PTW | T |
| >10.24 | Not configured | During CN PTW | Shortest value of default paging cycle and UE specific DRX cycle if configured by upper layer |
| >10.24 | Not configured | Outside CN PTW | RAN paging cycle. |
| >10.24 | ≤10.24 | During CN PTW | Shortest value of default paging cycle and UE specific DRX cycle if configured by upper layer |
| >10.24 | ≤10.24 | Outside CN PTW | INACTIVE eDRX cycle |

* Option 3: RAN4 to define serving cell evaluation requirement based on eDRX cycle length = MIN(TeDRX-RAN, TeDRX-CN), where TeDRX-RAN is the eDRX cycle configured by the gNB and TeDRX-CN  is the eDRX cycle configured by the core network (AMF). Define the neighbour cell (intra-frequency, inter-frequency and inter-RAT) measurement requirements based only on the eDRX cycle configured for UE for INACTIVE mode**(TeDRX-RAN).** (Ericsson)
* Recommended WF
* For requirement defining could companies check issues listed in R4-2208981? Encourage suggestion on any compromise method at this meeting

**Disucssion:**

Apple: intra-frequency is missing.

Huawei: For intra-frequency measurement, we prefer Option 1.

Mediatek: for intra-frequency, if UE wakes up for the paging, UE can do directly serving cell and intra-frequency measurement with paging.

**Agreement:**

* For serving cell measurement, agree on Option 2
* For inter-frequency and inter-RAT measurement, agree on Option 1.
* FFS whether Option 1 or Option 2 can be agreed for intra-frequency measurement.

**Issue 1-3-2: Inactive state requirements when idle eDRX is no longer than 10.24s**

* Option 1: Measurement requirements for inactivate state (serving cell, intra/inter frequency) Redcap UE are based on inactive DRX or inactive eDRX when inactive eDRX is configured (vivo Huawei ZTE)
* Option 2: Based on the paging monitoring cycle of T agreed in RAN2 (Xiaomi oppo Nokia Apple )

|  |  |  |  |
| --- | --- | --- | --- |
| ≤10.24 | Not configured | NA | Shortest of RAN paging cycle and IDLE eDRX cycle |
| ≤10.24 | ≤10.24 | NA | The shortest of IDLE eDRX cycle and INACTIVE eDRX cycle. |

* Option 3: Based on the paging monitoring cycle of T in the following table. (MTK)

|  |  |  |
| --- | --- | --- |
| IDLE eDRX[s] | Inactive eDRX[s] | T |
| ≤10.24 | Not configured | RAN paging cycle |
| ≤10.24 | ≤10.24 | The shortest of IDLE eDRX cycle and INACTIVE eDRX cycle. |

* Option 4: RAN4 to define serving cell evaluation requirement based on eDRX cycle length = MIN(TeDRX-RAN, TeDRX-CN), where TeDRX-RAN is the eDRX cycle configured by the gNB and TeDRX-CN  is the eDRX cycle configured by the core network (AMF). Define the neighbour cell (intra-frequency, inter-frequency and inter-RAT) measurement requirements based only on the eDRX cycle configured for UE for INACTIVE mode**(TeDRX-RAN).** (Ericsson)
* Recommended WF
* For requirement defining could companies check issues listed in R4-2208981? Encourage suggestion on any compromise method at this meeting

**Agreement:**

* For serving cell measurement, agree on Option 2
* For inter-frequency and inter-RAT measurement, agree on Option 1.
* FFS whether Option 1 or Option 2 can be agreed for intra-frequency measurement.

**Reply LS:**

**Issue 3-1-1: On CD-SSB and NCD-SSB(s) transmission time**

* Proposals
* Option 1: It is feasible to configure CD-SSB and NCD-SSB(s) at different times by configuring an offset. (CMCC vivo Huawei Nokia Apple Ericsson)
* Recommended WF
* Is the following wording agreeable as a base? More detailed information can be discussed further at this meeting
  + It’s feasible to configure a time offset between CD-SSB and corresponding NCD-SSB.

**Agreement:** It’s feasible to configure a time offset between CD-SSB and corresponding NCD-SSB.

**RRM relaxation:**

**Issue 2-2-3: Higher priority inter-frequency measurement Relaxation when only Rel-17 stationarity criterion is met and Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ**

* Proposals:
* **Option 1**: The inter-frequency measurement relaxation could use measurement period of 4 hours, when only Rel-17 stationarity criterion is met and Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ. (xiaomi Apple)
* Option 2a: measurement at least every K\*Thigher\_priority\_search where Thigher\_priority\_search is described in clause 4.2B.2.7 and, K = 60\*2 = 120 regardless of whether 1 Rx or 2 Rx RedCap is configured with eDRX\_IDLE cycle or not (oppo)
* **Option 2b**: when only Rel-17 stationarity criterion is satisfied and Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ or both Rel-17 criteria are satisfied, RRM relaxation for higher priority frequency could be based on the same methodology used by Rel-16 UE power saving, i.e., based on K4\*Thigher\_priority\_search where K4 = 4\*K2 = 240. (vivo)
* Option 3: When only Rel-17 stationary criterion is met and Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, UE measures higher priority inter-frequency/inter-RAT layers at least every 1 hour. When both Rel-17 criteria are satisfied and Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, UE measures high priority inter-frequency/inter-RAT layers at least every 2 hours. (CMCC)
* Option 4: LS response from RAN2 on the Inter-frequency measurement Relaxation when only Rel-17 stationarity criterion is met shall be captured in RAN4 specification. (MTK)
* Option 5:  For UEs fulfilling the stationary criterion, the relaxed requirements for measurements of inter-frequency/inter-RAT of higher priority is: If Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ then the UE shall search for inter-frequency layers/inter-RAT E-UTRAN of higher priority at least every K4\*Thigher\_priority\_search where Thigher\_priority\_search is described in clause 4.2.2.7 and K4=6. Clarification text is added to specification to clarify that for UE fulfilling two relaxation criteria is allowed to skip measurements on higher priority carriers for up to 4 hours. (Ericsson)
* Option 6: There is no specification impact due to measurement on higher priority inter-frequency layers as the same relaxation method applies as for equal and lower priority inter-frequency layers. (Nokia)
* Recommended WF
* Moderator Note: the one fixed long measurement period when both Rel-17 criteria are satisfied is 4 hours.
* Suggest to compromise to the option either from option 1 (4 hours) or option 2b (4 hours scaled by number of carriers)

**Discussion:**

Apple: support Option 1.

Ericsson: Why do we not follow the same approach?

Vivo: we share the same view as Ericsson Option 2b.

Mediatek: LS says the new priority rules. We can follow Rel-16. Option 1.

Vivo: We can compromise to Option 1.

Ericsson: UE is assumed to meet the two criteria. But it depends on the criteria. Can we interpret that the condition that we should fulfill the two criteria?

Huawei: we have different understanding. For Option 2, RAN2 indicate the high priority is not needed to introduce. The requirement should be 60s and multiple by frequency layer, which is not 4 hours. We need check RAN2 what the no indication means, relaxation or no relaxation.

Vivo: based on RAN2, it means relaxation. RAN2 do not want to introduce the indicator for it.

Apple: RAN2 means relaxation. We can agree with Ericson proposal.

Nokia: LS reply is not cristal clear. There was statement means there is no distinguish between priorities. Should Rel-16 be taken into account or Rel-17 new requirement should be considered? We prefer to have clarification from RAN2.

OPPO: Following RAN2 LS, the higher priority layer should be relaxed as equal to lower priority. Rel-17 requirmeent should be relaxed with scaling factor of 2 based on Rel-16 requirements. We think the requirement for Rel-16 high priority layer should be relaxed too.

Vivo: agree with Nokia. The LS is not clear. It means both higher or lower priority should be relaxed. RAN4 is expected to make decision.

**Discussion points:**

* For the inter-frequency measurement relaxation when two Rel-17 criteria are met, down-select to Option 1 and Option 2b as baselines.
* FFS for other scenarios

**Reply LS:**

**Issue 3-1-2: Detail configurations on the offset between CD-SSB and NCD-SSB**

* Proposals:
* Option 1 (vivo): Configuration of time offset should guarantee that NCD-SSB and CD-SSB could be covered by same or different gap(s) if measurements on both NCD-SSB and CD-SSB need gaps; Configuring time offset for NCD-SSB may provide flexibility for NW deployment.
* Option 2 (Nokia): Introduce signalling for indicating a timing offset between CD-SSB and NCD-SSB for serving cell and each configured neighbour cell; The timing offset between CD-SSB and NCD-SSB should be configurable in number of half frames to ensure the QCL’ed condition. The default timing offset, if applied, is one half frame
* Option 3 (Ericsson):
  + The time offset between two SSBs should be larger than the proximity 5ms considering the RF switching time is 0.5ms for MG.
  + The time offset between two SSBs should at least guarantee no SSB is partially overlapping with MG, such as based on the multiples of 10ms.
  + The time offset between two SSBs should be configured as the MGRP of MG to guarantee the possibility of the SSBs to be measured are fully overlapping within MG.
* Recommended WF
* TBA

**RRM relaxation:**

**Issue 2-3-1: On RRM relaxation principles for RRC\_CONNECTED mode**

* Proposals
* Option 1: In RRC Connected mode, RAN4 should define a concrete relaxation method, e.g., in terms of a scaling factor. The scaling factor can either be pre-defined in the spec or can be configured by the network (Qualcomm)
* Recommended WF
* Discuss whether RAN4 need continue the discussion to define a concrete relaxation method providing if RAN2 hasn’t considered any relaxation methods.
* Encourage companies to check RAN2’s solution on RRM relaxation at RRC\_Connected state

**RRM relaxation:**

**Issue 2-1-1: Scenario to be considered for Rel-17 RRM relaxation for Redcap UE when both Rel-16 and Rel-17 criteria are configured**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Rel-16 relaxation criterion** | **Rel-17 relaxation criterion** | **Applicability** |
| 7 | Rel-16 low mobility | Rel-17 stationary | Allowed |
| 8 | Rel-16 not-at-cell-edge | Rel-17 stationary | NO |
| 9 | Rel-16 low mobility & Rel-16 not-at-cell-edge | Rel-17 stationary | * Option 1: Not allowed(oppo Nokia Apple) * Option 2: Allowed (xiaomi Huawei MTK Ericsson vivo Qualcomm) |
| 10 | Rel-16 low-mobility | Rel-17 stationary & Rel-17 not-at-cell-edge | Allowed |
| 11 | Rel-16 not-at-cell-edge | Rel-17 stationary & Rel-17 not-at-cell-edge | Allowed |
| 12 | Rel-16 low mobility & Rel-16 not-at-cell-edge | Rel-17 stationary & Rel-17 not-at-cell-edge | Allowed |

* Recommended WF
* Could companies consider to use option 2 as a compromise

**eDRX:**

**Issue 1-2-1: FR2 Cell reselection requirements for RedCap UE with eDRX cycle when eDRX ≥20.48s**

* Option 1: Define requirements for FR2 for all eDRX configurations including eDRX = 20.48s (vivo Ericsson Nokia)
* Option 1a: Define requirements when eDRX = 20.48s, a note could be added on power consumption efficiency if there is strong concern (vivo)
* Option 2: The network shall not configure eDRX cycle with PTW = 20.48s with DRX cycle , a LS should be sent to RAN2 (MTK)
* Recommended WF
* Based on analysis from companies supporting option 1, could option 1 be used as a compromise

**GTW on May 13**

**eDRX:**

**Issue 1-3-1: Inactive state requirements when idle eDRX is longer than 10.24s**

* Option 1: Measurement requirements for inactivate state (serving cell, intra/inter frequency) Redcap UE are based on inactive DRX or inactive eDRX when inactive eDRX is configured (vivo Huawei ZTE)
* Option 2: Based on the paging monitoring cycle of T agreed in RAN2 (Xiaomi oppo Nokia MTK Apple)

|  |  |  |  |
| --- | --- | --- | --- |
| IDLE eDRX[s] | Inactive eDRX[s] | Outside CN PTW or during CN PTW | T |
| >10.24 | Not configured | During CN PTW | Shortest value of default paging cycle and UE specific DRX cycle if configured by upper layer |
| >10.24 | Not configured | Outside CN PTW | RAN paging cycle. |
| >10.24 | ≤10.24 | During CN PTW | Shortest value of default paging cycle and UE specific DRX cycle if configured by upper layer |
| >10.24 | ≤10.24 | Outside CN PTW | INACTIVE eDRX cycle |

* Option 3: RAN4 to define serving cell evaluation requirement based on eDRX cycle length = MIN(TeDRX-RAN, TeDRX-CN), where TeDRX-RAN is the eDRX cycle configured by the gNB and TeDRX-CN  is the eDRX cycle configured by the core network (AMF). Define the neighbour cell (intra-frequency, inter-frequency and inter-RAT) measurement requirements based only on the eDRX cycle configured for UE for INACTIVE mode**(TeDRX-RAN).** (Ericsson)
* Recommended WF
* For requirement defining could companies check issues listed in R4-2208981? Encourage suggestion on any compromise method at this meeting

***Minutes on May-11 GTW***

***Disucssion:***

*Apple: intra-frequency is missing.*

*Huawei: For intra-frequency measurement, we prefer Option 1.*

*Mediatek: for intra-frequency, if UE wakes up for the paging, UE can do directly serving cell and intra-frequency measurement with paging.*

***Agreement:***

* *For serving cell measurement, agree on Option 2*
* *For inter-frequency and inter-RAT measurement, agree on Option 1.*
* *FFS whether Option 1 or Option 2 can be agreed for intra-frequency measurement.*

**Issue 2-2-2: Principle on RRM relaxation for eDRX with PTW**

* Proposals
* Option 1: No measurement relaxation when UE is configured with eDRX cycles above 10.24 seconds (xiaomi Huawei vivo)
* Option 2: Introduce intra-/inter-frequency and inter-RAT E-UTRAN neighbour cell measurement relaxations for eDRX cycles with PTW up to eDRX cycle length of 163.84 s, whereby the UE applies the scaling factor (6) based on measurement occasions across PTWs but does not measure across PTW’s. (Nokia)
* Option 3: No need to support “The relaxed RRM measurement period for PHY filtering shall not cross different PTW windows” (MTK)
* Option 4: If Rel-16/17 relaxed measurement requirements can be applied with eDRX cycles greater than 10.24 seconds (with PTW), the relaxed RRM measurement period for PHY filtering shall not cross different PTW windows (Apple)
* Option 5: The UE is allowed to apply the agreed relaxation factor (6) for eDRX cycle up to [20.48 sec] while the UE does measurement without relaxation within PTW. When the UE has met two relaxation criteria while configured with eDRX cycles ≥ 20.48, the UE is allowed to meet the relaxed measurement requirements which allows the UE to skip the measurement up to 4 hours (Ericsson)
* Recommended WF
* Collect company’s views

***Minutes on May-11 GTW***

***Discussion:***

*Ericsson: Support to relax RRM requirements.*

*Vivo: we can discuss how to relax further.*

*Apple: we are considering to add principle.*

*Nokia: We should take Ericsson comments into consideration.*

*Apple: does the second bullet mean UE can relax 4 hours for measurement.*

***Agreement:***

* *Relax RRM requirements for eDRX with PTW*

***Agreement:***

* *For eDRX with PTW*
* *For the single relaxation criterion, if Rel-16/17 relaxed measurement requirements can be applied with eDRX cycles greater than 10.24 seconds (with PTW), the relaxed RRM measurement period for PHY filtering shall not be cross different PTW windows*
  + - * *Scaling factor is TBD*
* *For two relaxation criteria, when the UE has met two relaxation criteria, the UE is allowed to reuse the fixed long measurement period of 4 hours.*
* *For eDRX wihout PTW*
  + *For two relaxation criteria, when the UE has met two relaxation criteria, the UE is allowed to reuse the fixed long measurement period of 4 hours.*

Updated agreement.

**Agreement:**

* For eDRX with PTW
* For the single relaxation criterion, if Rel-16/17 relaxed measurement requirements can be applied with eDRX cycles greater than 10.24 seconds (with PTW), the relaxed RRM measurement period for PHY filtering shall not be cross different PTW windows
  + - * Scaling factor is 6
        + FFS on the conditions that the scaling factor applies.
* For two relaxation criteria, when the UE has met two relaxation criteria, the UE is allowed to reuse the fixed long measurement period of 4 hours.
* For eDRX wihout PTW
  + For two relaxation criteria, when the UE has met two relaxation criteria, the UE is allowed to reuse the fixed long measurement period of 4 hours.

**RRM relaxation:**

**Issue 2-2-3: Higher priority inter-frequency measurement Relaxation when only Rel-17 stationarity criterion is met and Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ**

* Proposals:
* **Option 1**: The inter-frequency measurement relaxation could use measurement period of 4 hours, when only Rel-17 stationarity criterion is met and Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ. (xiaomi Apple)
* Option 2a: measurement at least every K\*Thigher\_priority\_search where Thigher\_priority\_search is described in clause 4.2B.2.7 and, K = 60\*2 = 120 regardless of whether 1 Rx or 2 Rx RedCap is configured with eDRX\_IDLE cycle or not (oppo)
* **Option 2b**: when only Rel-17 stationarity criterion is satisfied and Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ or both Rel-17 criteria are satisfied, RRM relaxation for higher priority frequency could be based on the same methodology used by Rel-16 UE power saving, i.e., based on K4\*Thigher\_priority\_search where K4 = 4\*K2 = 240. (vivo)
* Option 3: When only Rel-17 stationary criterion is met and Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, UE measures higher priority inter-frequency/inter-RAT layers at least every 1 hour. When both Rel-17 criteria are satisfied and Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ, UE measures high priority inter-frequency/inter-RAT layers at least every 2 hours. (CMCC)
* Option 4: LS response from RAN2 on the Inter-frequency measurement Relaxation when only Rel-17 stationarity criterion is met shall be captured in RAN4 specification. (MTK)
* Option 5: For UEs fulfilling the stationary criterion, the relaxed requirements for measurements of inter-frequency/inter-RAT of higher priority is: If Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ then the UE shall search for inter-frequency layers/inter-RAT E-UTRAN of higher priority at least every K4\*Thigher\_priority\_search where Thigher\_priority\_search is described in clause 4.2.2.7 and K4=6. Clarification text is added to specification to clarify that for UE fulfilling two relaxation criteria is allowed to skip measurements on higher priority carriers for up to 4 hours. (Ericsson)
* Option 6: There is no specification impact due to measurement on higher priority inter-frequency layers as the same relaxation method applies as for equal and lower priority inter-frequency layers. (Nokia)
* Recommended WF
* Moderator Note: the one fixed long measurement period when both Rel-17 criteria are satisfied is 4 hours.
* Suggest to compromise to the option either from option 1 (4 hours) or option 2b (4 hours scaled by number of carriers)

**Discussion points:**

* For the inter-frequency measurement relaxation when two Rel-17 criteria are met, down-select to Option 1 and Option 2b as baselines.
* FFS for other scenarios

**Reply LS:**

**Issue 3-1-2: Detail configurations on the offset between CD-SSB and NCD-SSB**

* Proposals:
* Option 1 (vivo): Configuration of time offset should guarantee that NCD-SSB and CD-SSB could be covered by same or different gap(s) if measurements on both NCD-SSB and CD-SSB need gaps; Configuring time offset for NCD-SSB may provide flexibility for NW deployment.
* Option 2 (Nokia): Introduce signalling for indicating a timing offset between CD-SSB and NCD-SSB for serving cell and each configured neighbour cell; The timing offset between CD-SSB and NCD-SSB should be configurable in number of half frames to ensure the QCL’ed condition. The default timing offset, if applied, is one half frame
* Option 3 (Ericsson):
  + The time offset between two SSBs should be larger than the proximity 5ms considering the RF switching time is 0.5ms for MG.
  + The time offset between two SSBs should at least guarantee no SSB is partially overlapping with MG, such as based on the multiples of 10ms.
  + The time offset between two SSBs should be configured as the MGRP of MG to guarantee the possibility of the SSBs to be measured are fully overlapping within MG.
* Recommended WF
* TBA

**Issue 1-1-1: FR2 serving cell requirements for Redcap UE with eDRX length ≥ 20.48s**

* Option 1: Define requirements for FR2 for all eDRX configurations including eDRX = 20.48s (vivo Ericsson Nokia)
* Option 1a: Define requirements when eDRX = 20.48s, a note could be added on power consumption efficiency if there is strong concern (vivo)
* Option 2: The network shall not configure eDRX cycle with PTW = 20.48s with DRX cycle , a LS should be sent to RAN2 (MTK)
* Recommended WF
  + Based on analysis from companies supporting option 1, could option 1 be used as a compromise

Disussion points: Define requirements when eDRX = 20.48s

* FFS on where and how to capture the waking up time.

##### 9.19.3.1 Impacts from UE complexity reduction

###### 9.19.3.1.1 General

**R4-2208071 Discussion on the remaining RRM issues for 1Rx RedCap UEs**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208112 Discussion on remaining issues for general requirements for Redcap UE**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2208266 Considerations on remaining issues for general aspects on Redcap**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208365 Discussion on general requirements on Redcap UE**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208390 On general requirements for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2208974 Discussion on general RRM requirements impacts for RedCap UE**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2208975 Draft CR on applicability rule of requirements for Redcap UE**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Not pursued.**

**R4-2209048 Draft CR to TS 38.133 on definitions and applicability for RedCap**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2211037 (from R4-2209048).**

**R4-2211037 Draft CR to TS 38.133 on definitions and applicability for RedCap**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2209446 Big CR for RedCap for TS 36.133**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7157 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Big CR to capture changes from all endorsed CRs for TS 36.133.

**Decision:** The document was **for email approval**.

**R4-2209780 General discussion UE capability and scheduling availability**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2209902 Discussions on general requirements for RedCap**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss general requirements that apply in all RRC states for RedCap.

**Decision: Noted.**

**R4-2209908 Draft CR on RRC\_IDLE mode requirements for RedCap for TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR contains additional changes to IDLE mode section based on the endorsed big CR from last meeting.

**Decision: Revised to R4-2211038 (from R4-2209908).**

**R4-2211038 Draft CR on RRC\_IDLE mode requirements for RedCap for TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR contains additional changes to IDLE mode section based on the endorsed big CR from last meeting.

**Decision: Endorsed.**

**R4-2209913 Big CR for RedCap for TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2390 rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Big CR to capture changes from all endorsed CRs for TS 38.133.

**Decision:** The document was **for email approval**.

**R4-2210218 General issues on complexity reduction of RedCap UEs**

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

**Decision: Noted.**

###### 9.19.3.1.2 Mobility requirements

**R4-2208072 Discussion on mobility requirement for RedCap UE**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208113 Discussion on remaining issues for mobility requirements for Redcap UE**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2208268 Considerations on remaining issues for mobility requirements for Redcap**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208366 Discussion on mobility requirements for RedCap UE**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208391 On mobility requirements for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2208733 Requirements under RRC Connected mode for RedCap UEs**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208976 Discussion on UE mobility requirements due to UE complexity reduction**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2208977 Draft CR on mobility requirements for Redcap UE**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211040 (from R4-2208977).**

**R4-2211040 Draft CR on mobility requirements for Redcap UE**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209042 Discussion on mobility requirements for RedCap**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2209043 Draft CR to TS 38.133 Corrections on mobility requirements for RedCap**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2211041 (from R4-2209043).**

**R4-2211041 Draft CR to TS 38.133 Corrections on mobility requirements for RedCap**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Not pursued.**

**R4-2209763 Discussion on mobility requirements**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2209773 Discussion on mobility requirement for RedCap**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2209903 Discussions on RedCap mobility requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the mobility requirements for RedCap, HO, RRC re-establishment, RA and RRC connection release with redirection.

**Decision: Noted.**

**R4-2209909 Draft CR on SDT requirements for RedCap for TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR contains SDT requirements for RedCap.

**Decision: Revised to R4-2211039 (from R4-2209909).**

**R4-2211039 Draft CR on SDT requirements for RedCap for TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR contains SDT requirements for RedCap.

**Decision: Endorsed.**

**R4-2210220 Mobility requirements for RedCap UEs**

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

**Decision: Noted.**

###### 9.19.3.1.3 Timing requirements

**R4-2208073 Discussion on the use of SSB for timing requirements of RedCap UE**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208109 Draft CR on timing requirements for RedCap UE**

*Type: draftCR For: Approval  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Xiaomi*

**Decision: Revised to R4-2211042 (from R4-2208109).**

**R4-2211042 Draft CR on timing requirements for RedCap UE**

*Type: draftCR For: Approval  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Xiaomi*

**Decision: Endorsed.**

**R4-2208114 Discussion on remaining issues for timing requirements**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2208147 Discussion on RRM timing requirements for RedCap devices**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208272 Reply LS on RSRP measurement before Msg1 or MsgA retransmission**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: vivo*

**Decision: Noted.**

**R4-2208367 Discussion on timing requirements on Redcap UE**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208392 On timings requirements for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2208720 Timing requirements for RedCap UEs**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208978 Discussion on UE timing requirements due to UE complexity reduction**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209700 On timing requirements for RedCap**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on open issues for RedCap timing requirements

**Decision: Noted.**

**R4-2209701 Draft CR Correction on timing requirements for RedCap UEs**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

CR on RedCap timing requirements

**Decision: Merged (with R4-2208109).**

**R4-2209764 UE complexity reduction impact on timing requirements**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2210175 Further analysis of UE transmit timing requirements in RedCap**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Further analysis of UE initial transmit timing requirements for redcap UE

**Decision: Noted.**

**R4-2210176 Draft CR on UE transmit timing requirements in RedCap**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Draft CR on update to the UE initial transmit timing requirements for redcap UE

**Decision: Merged (with R4-2208109).**

###### 9.19.3.1.4 Signalling characteristics

**R4-2208148 Discussion on BWP switching for RedCap devices**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208269 Considerations on remaining issues for signalling characteristics for Redcap**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208368 Discussion on signaling characteristics requirements for RedCap UE**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208393 On Signalling characteristics requirements for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2208394 Draft CR to 38.133 introducing RedCap requirements on active BWP switch delay, active TCI state switching delay and UE specific CBW change**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: CMCC*

**Decision: Revised to R4-2211043 (from R4-2208394).**

**R4-2211043 Draft CR to 38.133 introducing RedCap requirements on active BWP switch delay, active TCI state switching delay and UE specific CBW change**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: CMCC*

**Decision: Endorsed.**

**R4-2208721 On Signaling characteristics of RedCap UEs**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

The paper discusses one remaining issue on SSB based BFD.

**Decision: Noted.**

**R4-2208979 Discussion on signaling characteristics due to UE complexity reduction**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209046 Draft CR to TS 38.133 Signalling characteristics for RedCap**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged (with R4-2209770).**

**R4-2209047 Discussion on signalling characteristics for RedCap**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2209765 Discussion on signaling characteristic in RedCap**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2209770 DraftCR on reduced capability Ues for RLM for RedCap**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2211045 (from R4-2209770).**

**R4-2211045 DraftCR on reduced capability Ues for RLM for RedCap**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Endorsed.**

**R4-2209774 Discussion on signalling characteristics for RedCap**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2209904 Discussions on RedCap signaling characteristics**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss signaling characteristics for RedCap, e.g. RLM, link recovery etc.

**Decision: Noted.**

**R4-2210221 On signaling characteristics for RedCap UEs**

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

**Decision: Noted.**

###### 9.19.3.1.5 Measurement procedure

**R4-2208115 Discussion on remaining issues for measurement procedure for Redcap UE**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2208149 Discussion on use of NCD-SSB for CONNECTED mode measurements for RedCap devices**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208267 Considerations on remaining issues for measurement procedure for Redcap**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208369 Discussion on measurement requirements for RedCap UE**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208395 On Measurement procedure for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2208722 Measurement procedure of RedCap UEs**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208980 Discussion on measurement requirements due to UE complexity reduction**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209040 Draft CR to TS 38.133 Measurement procedures for RedCap**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged (with R4-2209771 and R4-2209772).**

**R4-2209041 Discussion on measurement procedures for RedCap**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2209445 draftCR on inter-RAT NR measurement for RedCap**

*Type: draftCR For: Endorsement  
 36.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

To introduce the inter-RAT NR measurement for LTE RedCap

**Decision: Revised to R4-2211046 (from R4-2209445).**

**R4-2211046 draftCR on inter-RAT NR measurement for RedCap**

*Type: draftCR For: Endorsement  
 36.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

To introduce the inter-RAT NR measurement for LTE RedCap

**Decision: Endorsed.**

**R4-2209766 Measurement procedure for RedCap**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2209771 DraftCR on reduced capability Ues for general measurements and intra-frequency**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2211048 (from R4-2209771).**

**R4-2211048 DraftCR on reduced capability Ues for general measurements and intra-frequency**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2211215 (from R4-2211048).**

**R4-2211215 DraftCR on reduced capability Ues for general measurements and intra-frequency**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Endorsed.**

**R4-2209772 DraftCR on reduced capability Ues for inter-frequency and inter-RAT measurements**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2211049 (from R4-2209772).**

**R4-2211049 DraftCR on reduced capability Ues for inter-frequency and inter-RAT measurements**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2211216 (from R4-2211049).**

**R4-2211216 DraftCR on reduced capability Ues for inter-frequency and inter-RAT measurements**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Endorsed.**

**R4-2209775 On remaining issues for measurement procedure for RedCap**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2209905 Discussions on RedCap measurement procedure**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss CONNECTED mode measurement procedure for RedCap.

**Decision: Noted.**

**R4-2210219 Measurement procedures for 1Rx UEs**

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

**Decision: Noted.**

##### 9.19.3.2 Extended DRX enhancements

**R4-2208116 Discussion on remaining issues for RedCap eDRX**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2208270 Considerations on remaining issues for Redcap eDRX**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208370 Discussion on eDRX requirements for RedCap UE**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208396 On Extended DRX cycle for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Withdrawn.**

**R4-2208723 On extended DRX enhancements for RedCap**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208981 Discussion on Extended DRX enhancements for RedCap UE**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2208982 Draft CR on measurement requirements for Redcap UE in inactive mode**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211051 (from R4-2208982).**

**R4-2211051 Draft CR on measurement requirements for Redcap UE in inactive mode**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Endorsed.**

**R4-2209044 Discussion on eDRX enhancements for RedCap**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2209045 Draft CR to TS 38.133 Correction on cell reselection requirements for RedCap**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

**R4-2209444 Discussions on eDRX requirements for RedCap**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the eDRX requirements for RedCap

**Decision: Noted.**

**R4-2209767 Extended DRX in IDLE mode and INACTIVE mode**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2209776 Discussion on RRM requirement with eDRX for RedCap**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

##### 9.19.3.3 RRM measurement relaxations

**R4-2208117 Discussion on remaining issues for RedCap RRM measurement relaxations**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2208271 Considerations on remaining issues for Redcap RRM relaxation**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208275 draft CR for idle state mobility for Redcap**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Merged.**

**R4-2208371 RRM measurement relaxations for RedCap UE**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208397 On RRM measurement relaxation for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2208724 Discussions on RRM measurement relaxations for RedCap UEs**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208983 Discussion on RRM measurement relaxations for RedCap UE**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209702 On RRM measurement relaxation for neighbouring cells**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on RRM relaxation for RedCap

**Decision: Noted.**

**R4-2209703 Draft CR Corrections to RRM measurement relaxations for RedCap**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

CR on RedCap RRM relaxation requirements

**Decision: Merged.**

**R4-2209768 RRM measurements relaxation for stationary criterion**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2209777 On RRM relaxation requirement for RedCap**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2209906 Discussions on RRM measurement relaxations**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss RRM measurement relaxation for RedCap.

**Decision: Noted.**

**R4-2210222 RRM relaxations enhancements for RedCap UE**

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

**Decision: Noted.**

##### 9.19.3.4 Others

**R4-2208398 Reply LS on introduction of an offset to transmit CD-SSB and NCD-SSB at different times**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2208825 Further discussion on NCD-SSB for RedCap UE**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208826 Reply LS on operation with and without SSB for RedCap UE**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208827 Reply LS on introduction of an offset to transmit CD-SSB and NCD-SSB at different times**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208984 Reply LS on introduction of an offset to transmit CD-SSB and NCD-SSB at different times**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209704 On timing offset between CD-SSB and NCD-SSB for RedCap**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on timing offset between CD-SSB and NCD-SSB

**Decision: Noted.**

**R4-2209781 Discussion on incoming LS from other WGs**

*Type: discussion For: Discussion  
 Source: MediaTek Korea Inc.*

**Decision: Noted.**

**R4-2209907 Discussions on other RedCap issues**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss other RedCap issues.

**Decision: Noted.**

**R4-2209910 Draft CR on uplink spatial relation requirements for RedCap for TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR contains uplink spatial relation switch requirements.

**Decision: Revised to R4-2211044 (from R4-2209910).**

**R4-2211044 Draft CR on uplink spatial relation requirements for RedCap for TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR contains uplink spatial relation switch requirements.

**Decision: Endorsed.**

#### 9.19.4 RRM performance requirements

**R4-2209049 Discussion on RRM performance for RedCap**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2209911 Workplan to RedCap RRM performance requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Workplan for RedCap RRM performance requirements.

**Decision: Revised to R4-2211050 (from R4-2209911).**

**R4-2211050 Workplan to RedCap RRM performance requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Workplan for RedCap RRM performance requirements.

**Decision: Approved.**

**R4-2209912 Discussions on RRM performance requirements for RedCap**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the performance requirements for RedCap.

**Decision: Noted.**

**R4-2209915 Draft CR on side conditions on RRM requirements applicability for RedCap**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

DraftCR ffor side conditions for RedCap.

**Decision: Endorsed.**

#### 9.19.5 UE demodulation and CSI requirements

##### 9.19.5.1 General

##### 9.19.5.2 Demodulation requirements

###### 9.19.5.2.1 PDSCH/SDR requirements

###### 9.19.5.2.2 PDCCH/PBCH requirements

##### 9.19.5.3 CSI requirements

###### 9.19.5.3.1 CQI requirements

###### 9.19.5.3.2 PMI/RI requirements

### 9.20 Positioning enhancements for NR

#### 9.20.1 RRM core requirement maintenance

**[103-e][216] NR\_pos\_enh\_1, AI 9.20.1, 9.20.2, 9.20.1.2, 9.20.2.2, 9.20.1.4, 9.20.2.4, 9.20.1.6, 9.20.2.6 –Muhammad Kazmi**

**R4-2210288 Email discussion summary for [103-e][216] NR\_pos\_enh\_1**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210485 (from R4-2210288).**

**R4-2210485 Email discussion summary for [103-e][216] NR\_pos\_enh\_1**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210600 | WF on NR Positioning Enhancements (Part 1) | Ericsson |  |
| R4-2210601 | Further reply LS on condition for PRS measurement outside the MG | Huawei, Hisilicon | To: RAN1, RAN2.  Reply to R1-2112883 |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| [R4-2208212](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208212.zip) | R4-2211052 | CR on PRS-RSRP measurement period without gaps | CATT | Revised | HW CR in R4-2209220 in other thread [217] overlaps with this CR. |
| [R4-2208213](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208213.zip) | R4-2211053 | CR on PRS-RSRPP measurement period requirements | CATT | Revised |  |
| [R4-2209221](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209221.zip) |  | Discussion on PRS measurement outside MG | Huawei, Hisilicon | Noted |  |
| [R4-2209222](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209222.zip) | R4-2211054 | CR on requirements for UE Rx-Tx measurement with reduced latency | Huawei, Hisilicon | Revised | Capture changes in section in E/// CR in R4-2209787. |
| [R4-2209223](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209223.zip) | R4-2211055 | CR on RSTD measurement period requirements without gaps | Huawei, Hisilicon | Revised |  |
| [R4-2209228](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209228.zip) |  | CR to introduce per-FR MG for PRS measurement | Huawei, Hisilicon | Agreed |  |
| [R4-2209787](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209787.zip) |  | Correction to RSTD and UE Rx-Tx measurement period requirement in RRC connected state | Ericsson Inc. | Nor pursued | HW CR in R4-2209220 in other thread [217] overlaps with this CR. |
| [R4-2208216](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208216.zip) | R4-2211056 | Reply LS on the dropping rule of DL signals/channels for capability 1B and 2 | CATT | Revised |  |
| [R4-2209229](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209229.zip) | R4-2211057 | CR on scheduling restriction for PRS-RSRPP measurement | Huawei, Hisilicon | Revised |  |
| [R4-2208806](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208806.zip) |  | Draft CR to 38.133 Introduction of positioning measurement accuracy requirements for reduced number of samples | vivo | Postponed |  |
| [R4-2208807](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208807.zip) |  | Draft CR to 38.133 Introduction of test case for PRS measurements without gaps | vivo | Postponed |  |
| [R4-2210100](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210100.zip) |  | Addition of Latency reduction performance requirements | Ericsson | Postponed |  |
| [R4-2210104](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210104.zip) | R4-2211058 | Additional path measurement report mapping for RSTD, UE Rx-Tx time difference measurement. | Ericsson | Revised | Related to issues 5-2-1 and 5-2-2 |
| [R4-2210172](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210172.zip) | R4-2211059 | Big DraftCR Template for Performance Requirements for Positioning Enhancement | Ericsson | Revised |  |
| [R4-2210171](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210171.zip) | R4-2211060 | Work split on performance requirements for positioning enhancement | Ericsson | Revised |  |
| [R4-2208026](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208026.zip) |  | Open issues in core requirements for NR positioning - latency reduction | Qualcomm Incorporated | Noted |  |
| [R4-2208211](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208211.zip) |  | Discussion on latency reduction of positioning measurement | CATT | Noted |  |
| [R4-2208372](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208372.zip) |  | Discussion on latency reduction of positioning measurements | OPPO | Noted |  |
| [R4-2210093](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210093.zip) |  | Remaining issues on latency reduced positioning. | Ericsson | Noted |  |
| [R4-2208527](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208527.zip) |  | Discussion on gapless based positioning measurement | CMCC | Noted |  |
| [R4-2208798](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208798.zip) |  | Remain issues on latency reduction of positioning measurement | vivo | Noted |  |
| [R4-2208526](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208526.zip) |  | Discussion on test cases for latency reduction of positioning measurement | CMCC | Noted |  |
| [R4-2208802](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208802.zip) |  | Discussion on performance requirements for latency reduction of positioning measurements | vivo | Noted |  |
| [R4-2208805](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208805.zip) |  | Discussion on performance requirements for PRS-RSRPP | vivo | Noted |  |
| [R4-2209227](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209227.zip) |  | Discussion on impacts to other RAN4 requirements | Huawei, Hisilicon | Noted |  |
| [R4-2208808](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208808.zip) |  | Further simulation results for PRS measurement with reduced number of samples | vivo | Noted |  |
| [R4-2210095](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210095.zip) |  | Additional path measurement and RRM core requirement | Ericsson | Noted |  |
| [R4-2208727](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208727.zip) |  | on PRS measurement outside the measurement gap | ZTE Corporation | Noted |  |
| [R4-2210096](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210096.zip) |  | Addtional dropping rule for cap 1b and cap2 UE during gapless PRS measurement | Ericsson | Noted |  |
| [R4-2208222](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208222.zip) |  | General discussion on R17 ePOS perf part | CATT | Noted |  |
| [R4-2208028](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208028.zip) |  | Additional simulation results with reduced number of PRS samples | Qualcomm Incorporated | Noted |  |
| [R4-2208218](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208218.zip) |  | Discussion on performance requirements for latency reduction of positioning measurement | CATT | Noted |  |
| [R4-2209231](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209231.zip) |  | Discussion on accuracy and tests for latency reduction | Huawei, Hisilicon | Noted |  |
| [R4-2210099](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210099.zip) |  | Latency reduction performance requirements | Ericsson | Noted |  |
| [R4-2209233](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209233.zip) |  | Discussion on TCs for PRS measurement outside MG | Huawei, Hisilicon | Noted |  |
| [R4-2210103](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210103.zip) |  | Additional path measurement report mapping for existing positioning measurements | Ericsson | Noted |  |
| [R4-2208029](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208029.zip) |  | On performance requirements for PRS-RSRPP | Qualcomm Incorporated | Noted |  |
| [R4-2209234](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209234.zip) | R4-2211061 | Discussion on accuracy requirements and TCs for PRS-RSRPP | Huawei, Hisilicon | Revised |  |
| [R4-2210105](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210105.zip) |  | On performance requirements for DL PRS-RSRPP measurement. | Ericsson | Noted |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210600 |  | WF on NR Positioning Enhancements (Part 1) | Ericsson | Approved |  |
| R4-2210601 |  | Further reply LS on condition for PRS measurement outside the MG | Huawei, Hisilicon | Approved |  |
| R4-2211052 |  | CR on PRS-RSRP measurement period without gaps | CATT | Agreed |  |
| R4-2211053 |  | CR on PRS-RSRPP measurement period requirements | CATT | Agreed |  |
| R4-2211054 |  | CR on requirements for UE Rx-Tx measurement with reduced latency | Huawei, Hisilicon | Agreed |  |
| R4-2211055 |  | CR on RSTD measurement period requirements without gaps | Huawei, Hisilicon | Agreed |  |
| R4-2211056 |  | Reply LS on the dropping rule of DL signals/channels for capability 1B and 2 | CATT | Approved |  |
| R4-2211057 |  | CR on scheduling restriction for PRS-RSRPP measurement | Huawei, Hisilicon | Agreed |  |
| R4-2211058 | R4-2211205 | Additional path measurement report mapping for RSTD, UE Rx-Tx time difference measurement. | Ericsson | Endorsed | Miss the tdoc number |
| R4-2211059 |  | Big DraftCR Template for Performance Requirements for Positioning Enhancement | Ericsson | [R4-2210172](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210172.zip) endorsed  R4-2211059 withdrawn |  |
| R4-2211060 |  | Work split on performance requirements for positioning enhancement | Ericsson | Approved |  |
| R4-2211061 |  | Discussion on accuracy requirements and TCs for PRS-RSRPP | Huawei, Hisilicon | Approved | Channel model |

**R4-2210600 WF on NR Positioning Enhancements (Part 1)**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Approved.**

**R4-2210601 Further reply LS on condition for PRS measurement outside the MG**

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

**Decision: Approved.**

**GTW on May 12**

**Core part:**

**Issue 1-2-2: Conditions of PRS measurement outside the MG**

Response LS to RAN1/2 in R4-2206981: LS reply on condition of PRS measurement outside the MG

* Option 1: HW
* RAN4 to define how expected RTD is calculated for a non-serving cell from expected RSTD and expected RSTD uncertainty.
  + Expected RTD for a non-serving cell is defined as max(X1, X2), where
    - X1 = X1’, if X1’ < 0.5 slot; X1 = 1-X1’, otherwise
    - X1’= mod(expected RSTD + expected RSTD uncertainty, slot length)
    - X2 = X2’, if X2’ < 0.5 slot; X2 = 1-X2’, otherwise
    - X2’= mod(expected RSTD - expected RSTD uncertainty, slot length)
  + UE capability for the maximum RTD include candidate values {CP length, 1/4 symbol, 0.5 slot}.
* Option 2: QC
* The applicability condition on Rx timing difference between the serving cell and a neighbor cell/TRP for PRS measurements within a PPW is , where
  + is the time difference between the start of a slot containing PRS from the neighbor cell/TRP and the start of the closest slot from the serving cell, and
  + is the selected threshold.
* The UE capability to signal the threshold of the applicability condition on Rx timing difference between serving cell and neighbor cells/TRPs for PRS measurements within a PPW includes the values: CP length, ¼ symbol length and ½ slot length.
  + Option 3: ZTE
* The agreement on two values {CP length, 0.5 slot} is enough
* Recommended WF
  + Discuss the proposals

**Discussions:**

Huawei: On the candidate value, we support option 2 and 1. For threashould definition, we do not fully agree with option 2. For option2, UE does not know value. We do not want to introduce the complex equation. We want to define things based on what UE knows.

Qualcomm: We support Option 2. It has been agreed that UE do not need to evaluate the timing difference. I would like to know with clarification if you are OK.

Vivo: We agree with Qualcomm. UE is not required to calculate the timing difference. In last meeting, we agree with two values, which can cover two cases sync and async. It seems that Qualcomm wants to do more for sync case. We have a lot of discussions in previous meetings. We are OK to add additional values for sync case. Why is should be 1/4 of symbol? We need consider half of symbol.

Nokia: We have same feel as vivo. The measurement symbol is too limited within CP length. We prefer 1/2 symbols. For the threshold, UE does not know. UE can assume. Both approaches option 1 and 2 are the same.

Ericsson: in our view, in terms of value, we are OK to define two values. UE should not evaluate the timing difference but just report capabilities.

Huawei: Whether UE needs to evaluate the threshold depends on UE implementation. If the resource does not meet the request, can UE measure? On the candidate values, we still prefer 1/4 of symbol. 1/2 symbol will cause the performance issue due to timing misalignment.

Qualcomm: Huawei concern is that delta should be exactly specified. We can refine the text. Before there is no agreement how the timing difference is calculated. If following the previous values, for cp length UE does not know threshold.

Huawei: to Qualcomm the resource does not meet the threshold condition should not be accounted. If UE measures the resources without evaluate the condition, such resource should be accounted.

Vivo: Everything is limited by the UE capability.

**Agreement:**

* Use Option 2 as baseline for further refinement
  + The expected RSTD and expected RSTD uncertainty should be taken into account in defining the condition.
* Further discuss the third values on top of CP length and 0.5 slot
  + Alternative 1: 1/4 symbol
  + Alternative 2: 1/2 symbol

**Performance part:**

**Issue 4-4-2: Conditions/scenarios for PRS-RSRPP measurement accuracy**

* Proposal 1: HW, CATT
* RAN4 to conduct link level simulations to evaluate the baseband performance of PRS-RSRPP measurement.
* Proposal 2: HW
* RAN4 to consider using TDL-D with K1=0dB for defining PRS-RSRPP accuracy requirements.
* Use realistic TOA estimation in the simulation for PRS-RSRPP.
* Use the following Es/Iot and PRS BW conditions at least for the simulation of PRS-RSRPP accuracy requirements.
* Set 1: Es/Iot >= -13dB, BW >= 24/52/104 RBs, 4 sample
* Set 2: Es/Iot >= -6dB, BW >= 52/104 RBs, 1 sample
* RAN4 to align how ideal PRS-RSRPP is derived based on the definition.

The following can be considered

where is the channel response in frequency domain for the k-th resource element, is the delay of the p-th path.

* Proposal 3: QC
* Leverage the two-tap propagation channel model defined in 38.101-4, Annex B.2.4, for the purpose of defining PRS-RSRPP measurement accuracy requirements.
* FFS: The values for channel parameters a,  and .
* Proposal 4: E///
* DL PRS-RSRPP measurement accuracy must be defined for AWGN and fading propagation conditions.
* Measurement accuracy requirement applies at least to the PRS-RSRPP of the first path, i.e., i = 1.
* Proposal 5: vivo
* The LOS channel model (i.e., TDL-D) should be considered for first path PRS-RSRP measurement accuracy requirements.
* Recommended WF
* Further discuss the proposals

**Discussions:**

Nokia: Two-tap propagation channel model is good choice.

Vivo: modified TDL-D should be used. If we keep two options, we need evaluate two channel models. It is unnecessary. We prefer modified TDL-D. For other aspects we need more time to check.

Qualcomm: about proposal 2, the second and third bullets are OK. Modified TDL-D is not the good choice. The accuracy should be based on perfect channel knowledge.

Ericsson: we agree with Qualcomm comment on channel model. The first path should not be too strong than the others. About the ideal PRS-RSRPP should be based on perfect value.

R&S: it is more practical to use the existing channel model. I wonder if the channel model proposed is used by other test cases.

Vivo: we need discuss ideal one.

CATT: we want to consider fading channel which used for TRS RSRP.

Intel: TDL-A is not proper. For the ideal PRS-RSRPP definition, the group should consider the window to collect the energy when defining the ideal.

Qualcomm: AWGN is not a good choice. For test, we use AWGN. We should replace the AWGN.

**Agreement:**

* RAN4 to conduct link level simulations to evaluate the baseband performance of PRS-RSRPP measurement.
* The parameters for evaluation
* Channel model: further down-select the following two options in this meeting
  + Option 1: Modified TDL-D
  + Option 2: Two-tap channel
* Use realistic TOA estimation in the simulation for PRS-RSRPP.
* Use the following Es/Iot and PRS BW conditions at least for the simulation of PRS-RSRPP accuracy requirements.
* Set 1: Es/Iot >= -13dB, BW >= 24/52/104 RBs, 4 sample
* Set 2: Es/Iot >= -6dB, BW >= 52/104 RBs, 1 sample
* FFS on ideal PRS-RSRPP

**Issue 4-4-3: Link simulation assumptions for PRS-RSRPP measurement accuracy**

* Option 1: HW
* Use the simulation assumption in Annex as starting point for link level simulations (R4-2209234)
* Recommended WF
* Further discuss the proposals

**Agreement:** revise the simulation assumption R4-2209234 based on the agreements above.

**Sub-topic 7-1: Performance: Draft CR work split**

**Issue 7-1-1: Work split/CR allocation: General aspects (Table 1):**

**Agreement:**

**Table 1: Work split on general aspects of performance requirements**

|  |  |  |  |
| --- | --- | --- | --- |
| **Set** | **Performance requirements** | **Impacted section in TS 38.133** | **Volunteer Company** |
| 1-1 | Big DraftCR on Performance Requirements for Positioning Enhancement | All relevant sections | Ericsson (Rapporteur) |
| 1-2 | Test configuration(s) related to PRS | A.3.X |  |
| 1-3 | PRP and PRS Ês/Iot conditions for NR PRS-based measurements | B.2.14 |  |

* Recommended WF
* Comments invited on draft CRs in Table 1.

**Issue 7-1-2: Work split/CR allocation: Accuracy and report mapping (Table 2):**

**Agreement:**

**Table 2: Work split on PRS measurement accuracy requirements and report mapping**

|  |  |  |  |
| --- | --- | --- | --- |
| **Set** | **PRS measurement accuracy requirements and report mapping** | **Impacted section in TS 38.133** | **Volunteer Company** |
| **PRS measurement accuracy** | | | |
| 2-1 | RSTD accuracy in FR1 and FR2 | 10.1.23.2 |  |
| 2-2 | PRS-RSRP accuracy in FR1 and FR2 | 10.1.24.2 |  |
| 2-3 | UE Rx-Tx accuracy in FR1 and FR2 | 10.1.25.2 |  |
| 2-4 | PRS-RSRPP accuracy in FR1 and FR2 | 10.1.X/10.1.X.Y1 |  |
| **PRS measurement report mapping** | | | |
| 2-5 | RSTD report mapping in FR1 and FR2 | 10.1.23.2 |  |
| 2-6 | PRS-RSRP report mapping in FR1 and FR2 | 10.1.24.2 |  |
| 2-7 | UE Rx-Tx report mapping in FR1 and FR2 | 10.1.25.2 |  |
| 2-8 | PRS-RSRPP report mapping in FR1 and FR2 | 10.1.X.Y2 |  |
| NOTE: Each set includes multiple features: reduced number of samples, RRC inactive state, TEG, additional path etc   * FFS whether to have separate requirements for TEG   NOTE: Define the accuracy and reporting mapping for the measurement with and without gap   * FFS on details about the structure of the specfications for those requireemtns * Capture the requirements for with and without gap in the same CR for a certain requirement | | | |

* Recommended WF
* Comments invited on draft CRs in Table 2.

**Issue 7-1-3: Work split/CR allocation: PRS measurement delay tests (Table 3):**

Discussions:

Huawei: for reduced smaple and full sample, we cannot combine them since the condition is different.

Ericsson: we cannot modify the legacy test cases in Rel-17 and it is better to work on the applicability.

Huawei: can we add the new requirements to the legacy RSRP test cases without changing the set-up?

Ericsson: if it is not identical there will be RAN5 issue. Maybe we can create another section. The Rel-17 capability cannot be supported in Rel-15/16.

**Agreement:** Further discuss the test cases to keep the reasonable number of test cases

* Discuss whether the test cases highlighted by yellow can be removed, or combined with other tests, or add the applicability to reduce the test case number.

**Table 3: Work split on PRS measurement delay test cases**

|  |  |  |  |
| --- | --- | --- | --- |
| **Set** | **PRS measurement delay test case scenarios** | **Impacted section in TS 38.133** | **Volunteer Company** |
| **PRS-RSRPP measurement delay tests in RRC connected** | | | |
| 3-1 | PRS-RSRPP reporting delay tests in FR1 (similar to PRS-RSRP in A.6.6.13) | A.6.6.X |  |
| 3-2 | PRS-RSRPP reporting delay tests in FR2 (similar to PRS-RSRP in A.6.6.13) | A.7.6.X |  |
| **PRS measurement delay tests with reduced samples in RRC\_CONNECTED** | | | |
| 3-3 | RSTD reporting delay test case with reduced number of samples in FR1 | A.6.6.12.X1 |  |
| 3-4 | RSTD reporting delay test case with reduced number of samples in FR2 | A.7.6.9.X1 |  |
| 3-5 | PRS-RSRP reporting delay test case with reduced number of samples in FR1 | A.6.6.13.X1 |  |
| 3-6 | PRS-RSRP reporting delay test case with reduced number of samples in FR2 | A.7.6.10.X1 |  |
| 3-7 | UE Rx-Tx reporting delay test case with reduced number of samples in FR1 | A.6.6.14.X1 |  |
| 3-8 | UE Rx-Tx reporting delay test case with reduced number of samples in FR2 | A.7.6.11.X1 |  |
| 3-9 | PRS-RSRPP reporting delay test case with reduced number of samples in FR1 | A.6.6.X.Y1 |  |
| 3-10 | PRS-RSRPP reporting delay test case with reduced number of samples in FR2 | A.7.6.X.Y1 |  |
| **Delay and scheduling restriction tests for PRS measurements without gaps** | | | |
| 3-11 | RSTD reporting delay and scheduling restriction test case in FR1 | A.6.6.12.X2 |  |
| 3-12 | RSTD reporting delay and scheduling restriction test case in FR2 | A.7.6.9.X2 |  |
| 3-13 | PRS-RSRP reporting delay and scheduling restriction test case in FR1 | A.6.6.13.X2 |  |
| 3-14 | PRS-RSRP reporting delay and scheduling restriction test case in FR2 | A.7.6.10.X2 |  |
| 3-15 | UE Rx-Tx reporting delay and scheduling restriction test case in FR1 | A.6.6.14.X2 |  |
| 3-16 | UE Rx-Tx reporting delay and scheduling restriction test case in FR2 | A.7.6.11.X2 |  |
| 3-17 | PRS-RSRPP reporting delay and scheduling restriction test case in FR1 | A.6.6.X.Y2 |  |
| 3-18 | PRS-RSRPP reporting delay and scheduling restriction test case in FR2 | A.7.6.X.Y2 |  |
| **PRS measurement delay tests in RRC\_INACTIVE** | | | |
| 3-19 | RSTD reporting delay test case in FR1 in RRC\_INACTIVE | A.6.X1.Y1.Z1 |  |
| 3-20 | RSTD reporting delay test case in FR2 in RRC\_INACTIVE | A.7.X1.Y1.Z1 |  |
| 3-21 | PRS-RSRP reporting delay test in FR1 in RRC\_INACTIVE | A.6.X1.Y2.Z1 |  |
| 3-22 | PRS-RSRP reporting delay test case in FR2 in RRC\_INACTIVE | A.7.X1.Y2.Z1 |  |
| 3-23 | UE Rx-Tx reporting delay test case in FR1 in RRC\_INACTIVE | A.6.X1.Y3.Z1 |  |
| 3-24 | UE Rx-Tx reporting delay test case in FR2 in RRC\_INACTIVE | A.7.X1.Y3.Z1 |  |
| 3-25 | PRS-RSRPP reporting delay test case in FR1 in RRC\_INACTIVE | A.6.X1.Y4.Z1 |  |
| 3-26 | PRS-RSRPP reporting delay test case in FR2 in RRC\_INACTIVE | A.7.X1.Y4.Z1 |  |
| 3-27 | RSTD reporting delay test case with reduced number of samples in FR1 in RRC\_INACTIVE | A.6.X1.Y1.Z2 |  |
| 3-28 | RSTD reporting delay test case with reduced number of samples in FR2 in RRC\_INACTIVE | A.7.X1.Y1.Z2 |  |
| 3-29 | PRS-RSRP reporting delay test with reduced number of samples in FR1 in RRC\_INACTIVE | A.6.X1.Y2.Z2 |  |
| 3-30 | PRS-RSRP reporting delay test case with reduced number of samples in FR2 in RRC\_INACTIVE | A.7.X1.Y2.Z2 |  |
| 3-32 | UE Rx-Tx reporting delay test case with reduced number of samples in FR1 in RRC\_INACTIVE | A.6.X1.Y3.Z2 |  |
| 3-32 | UE Rx-Tx reporting delay test case with reduced number of samples in FR2 in RRC\_INACTIVE | A.7.X1.Y3.Z2 |  |
| 3-33 | PRS-RSRPP reporting delay test case with reduced number of samples in FR1 in RRC\_INACTIVE | A.6.X1.Y4.Z2 |  |
| 3-34 | PRS-RSRPP reporting delay test case with reduced number of samples in FR2 in RRC\_INACTIVE | A.7.X1.Y4.Z2 |  |
| **PRS measurement delay tests with timing error group (TEG) in RRC\_CONNECTED** | | | |
| 3-35 | RSTD reporting delay test case with Rx TEG in FR1 | A.6.6.12.X3 |  |
| 3-36 | RSTD reporting delay test case with Rx TEG in FR2 | A.7.6.9.X3 |  |
| 3-37 | UE Rx-Tx reporting delay test case with RxTx TEG in FR1 | A.6.6.14.X3 |  |
| 3-38 | UE Rx-Tx reporting delay test case with RxTx TEG in FR2 | A.7.6.11.X3 |  |

* Recommended WF
* Comments invited on draft CRs in Table 3.

**Issue 7-1-4: Work split/CR allocation: PRS measurement accuracy tests (Table 4):**

Qualcomm: should we capture TEG test here or in other tests. TEG is optional. We can define TEG accuracy requirements and test cases. If UE reports the capability, then UE need pass those requriements.

Vivo/CATT: in the test cases, the report is expected. TEG test case can verify it. TEG ID should be reported and then accuracy requirement can be verified.

Intel: TEG is in unit of ns. Are we going to create such condition to verify it? It seems difficult.

Huawei: TEG test applies to UE supporting TEG. Even if TEG is supported, it is still optional for UE to report TEG. It is difficult. Agree with Qualcomm. It depends on whether UE report and how to report TEG.

Vivo: UE can support TEG for high accurate positioning. What is the assumption that UE does not report TEG ID? If UE supports TEG feature UE needs to report TEG ID.

CATT: for UE supporting TEG, it is possible that UE does not report TEG ID. For UE not supporting TEG ID, the rel-16 requirements can be applied.

**Agreement:** Further discuss the test cases to keep the reasonable number of test cases

* FFS on whether the TEG test should be included in Table 4 for PRS measurement accuracy test cases
* FFS on whether to remove or how to reduce the test case number for RRC\_inactive

**Table 4: Work split on PRS measurement accuracy test cases**

|  |  |  |  |
| --- | --- | --- | --- |
| **Set** | **PRS measurement accuracy test case scenarios** | **Impacted section in TS 38.133** | **Volunteer Company** |
| **PRS-RSRPP measurement accuracy tests in RRC connected** | | | |
| 4-1 | PRS-RSRPP accuracy tests in FR1 (similar to PRS-RSRP tests in A.6.7.14) | A.6.7.X |  |
| 4-2 | PRS-RSRPP accuracy tests in FR2 (similar to PRS-RSRP tests in A.7.7.11) | A.7.7.X |  |
| **PRS measurement accuracy tests with reduced samples in RRC connected** | | | |
| 4-3 | RSTD accuracy test case with reduced number of samples in FR1 | A.6.7.13.X1 |  |
| 4-4 | RSTD accuracy test case with reduced number of samples in FR2 | A.7.7.10.X1 |  |
| 4-5 | PRS-RSRP accuracy test case with reduced number of samples in FR1 | A.6.7.14.X1 |  |
| 4-6 | PRS-RSRP accuracy test case with reduced number of samples in FR2 | A.7.7.11.X1 |  |
| 4-7 | UE Rx-Tx accuracy test case with reduced number of samples in FR1 | A.6.7.15.X1 |  |
| 4-8 | UE Rx-Tx accuracy test case with reduced number of samples in FR2 | A.7.7.12.X1 |  |
| 4-9 | PRS-RSRPP accuracy test case with reduced number of samples in FR1 | A.6.7.X.Y1 |  |
| 4-10 | PRS-RSRPP accuracy test case with reduced number of samples in FR2 | A.7.7.X.Y1 |  |
| **PRS measurement accuracy tests in RRC inactive** | | | |
| 4-11 | RSTD accuracy test case in FR1 in RRC\_INACTIVE | A.6.X2.Y1.Z1 |  |
| 4-12 | RSTD accuracy test case in FR2 in RRC\_INACTIVE | A.7.X2.Y1.Z1 |  |
| 4-13 | PRS-RSRP accuracy test in FR1 in RRC\_INACTIVE | A.6.X2.Y2.Z1 |  |
| 4-14 | PRS-RSRP accuracy test case in FR2 in RRC\_INACTIVE | A.7.X2.Y2.Z1 |  |
| 4-15 | UE Rx-Tx accuracy test case in FR1 in RRC\_INACTIVE | A.6.X2.Y3.Z1 |  |
| 4-16 | UE Rx-Tx accuracy test case in FR2 in RRC\_INACTIVE | A.7.X2.Y3.Z1 |  |
| 4-17 | PRS-RSRPP accuracy test case in FR1 in RRC\_INACTIVE | A.6.X2.Y4.Z1 |  |
| 4-18 | PRS-RSRPP accuracy test case in FR2 in RRC\_INACTIVE | A.7.X2.Y4.Z1 |  |
| 4-19 | RSTD accuracy test case with reduced number of samples in FR1 in RRC\_INACTIVE | A.6.X2.Y1.Z2 |  |
| 4-20 | RSTD accuracy test case with reduced number of samples in FR2 in RRC\_INACTIVE | A.7.X2.Y1.Z2 |  |
| 4-21 | PRS-RSRP accuracy test with reduced number of samples in FR1 in RRC\_INACTIVE | A.6.X2.Y2.Z2 |  |
| 4-22 | PRS-RSRP accuracy test case with reduced number of samples in FR2 in RRC\_INACTIVE | A.7.X2.Y2.Z2 |  |
| 4-23 | UE Rx-Tx accuracy test case with reduced number of samples in FR1 in RRC\_INACTIVE | A.6.X2.Y3.Z2 |  |
| 4-24 | UE Rx-Tx accuracy test case with reduced number of samples in FR2 in RRC\_INACTIVE | A.7.X2.Y3.Z2 |  |
| 4-25 | PRS-RSRPP accuracy test case with reduced number of samples in FR1 in RRC\_INACTIVE | A.6.X2.Y4.Z2 |  |
| 4-26 | PRS-RSRPP accuracy test case with reduced number of samples in FR2 in RRC\_INACTIVE | A.7.X2.Y4.Z2 |  |

* Recommended WF
* Comments invited on draft CRs in Table 4.

-----------------------------------------------------------------------------------------------------------------------------

**[103-e][217] NR\_pos\_enh\_2, AI 9.20.1.1, 9.20.2.1, 9.20.1.3, 9.20.2.3, 9.20.1.5, 9.20.2.5 – Qiuge Guo**

**R4-2210289 Email discussion summary for [103-e][217] NR\_pos\_enh\_2**

*Type: other For: Information  
 Source: Moderator (CATT)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210486 (from R4-2210289).**

**R4-2210486 Email discussion summary for [103-e][217] NR\_pos\_enh\_2**

*Type: other For: Information  
 Source: Moderator (CATT)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210602 | WF on NR Positioning Enhancements (Part 2) | CATT |  |
| R4-2210603 | LS on Tx TEG framework | CATT | To: RAN1/2 |
| R4-2210604 | LS on switching time for SRS transmission outside initial UL BWP in RRC\_INACTIVE | Huawei | To: RAN1/2 |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2209220 | R4-2211062 | CR on measurement period requirements with multiple Rx TEGs | Huawei | Revised | Capture the agreements in issue 1-1-3 |
| R4-2208215 | R4-2211063 | CR on the PRS and RRM measurement requirements in RRC\_INACTIVE state | CATT | Revised | Capture the changes in 5.6.5 |
| R4-2208801 | R4-2211064 | CR to 38.133 on positioning measurement requirements in RRC INACTIVE state | vivo | Revised | Capture the agreements in issue 1-2-1 |
| R4-2209225 |  | CR on general requirements for PRS measurements in RRC Inactive | Huawei | Merged | Merged with R4-2208801 |
| R4-2209226 |  | CR on inter-frequency RRM requirements due to PRS measurement in INACTIVE | Huawei | Agreed |  |
| R4-2210173 | R4-2211065 | Correction to PRS measurement requirements in RRC inactive state | Ericsson | Revised | Capture the changes in 5.6.2, 5.6.3 and 5.6.4 |
| R4-2210098 | R4-2211168 | Condition for RSTD and UE Rx-Tx time difference measurement reporting | Ericsson | Revised | Based on issue 2-1-7. |
| R4-2210102 | R4-2211066 | CR on accuracy requirement in RRC inactive state | Ericsson | Revised | Capture the agreement in Issue 2-2-1 |
| R4-2208220 | R4-2211130 | Introduction of BDS B2a and B3I signals inTS 36.171 requirements for support of A-GNSS | CATT, CAICT, CENC | Revised | Based on further response. |
| R4-2208221 | R4-2211131 | Introduction of BDS B2a and B3I signals inTS 38.171 requirements for support of A-GNSS | CATT, CAICT, CENC | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210602 |  | WF on NR Positioning Enhancements (Part 2) | CATT | Approved |  |
| R4-2210603 |  | LS on Tx TEG framework | CATT | Approved | To: RAN1/2 |
| R4-2210604 |  | LS on switching time for SRS transmission outside initial UL BWP in RRC\_INACTIVE | Huawei | Approved | To: RAN1/2 |
| R4-2211062 |  | CR on measurement period requirements with multiple Rx TEGs | Huawei | Agreed |  |
| R4-2211063 |  | CR on the PRS and RRM measurement requirements in RRC\_INACTIVE state | CATT | Agreed |  |
| R4-2211064 |  | CR to 38.133 on positioning measurement requirements in RRC INACTIVE state | vivo | Agreed |  |
| R4-2211065 |  | Correction to PRS measurement requirements in RRC inactive state | Ericsson | Agreed |  |
| R4-2211168 | R4-2211207 | Condition for RSTD and UE Rx-Tx time difference measurement reporting | Ericsson | Postponed | Miss the tdoc number |
| R4-2211066 | R4-2211206 | CR on accuracy requirement in RRC inactive state | Ericsson | Endorsed | Miss the tdoc number in the file |
| R4-2211130 |  | Introduction of BDS B2a and B3I signals inTS 36.171 requirements for support of A-GNSS | CATT, CAICT, CENC | Endorsed |  |
| R4-2211131 |  | Introduction of BDS B2a and B3I signals inTS 38.171 requirements for support of A-GNSS | CATT, CAICT, CENC | Endorsed |  |

**R4-2210602 WF on NR Positioning Enhancements (Part 2)**

*Type: other For: Approval  
 Source: CATT*

**Decision: Approved.**

**R4-2210603 LS on Tx TEG framework**

*Type: LSout For: Approval  
 Source: CATT*

**Decision: Approved.**

**R4-2210604 LS on switching time for SRS transmission outside initial UL BWP in RRC\_INACTIVE**

*Type: LSout For: Approval  
 Source: Huawei*

**Decision: Approved.**

**GTW on May 12**

**Performance part:**

**Issue 2-1-1 The candidate timing error margins for Rx TEGs**

Proposals

* **Option 1:** (Qualcomm)
* (16 values): 1/2 Tc, 1 Tc, 2 Tc, 4 Tc, 8 Tc, 12 Tc, 16 Tc, 20 Tc, 24 Tc, 32 Tc, 40 Tc, 48 Tc, 56 Tc, 64 Tc, 72 Tc, 80 Tc.
* The applicable timing error margin values that can be selected by the UE are the pre-defined values that are not larger than the sum of the Rel-16 group delay margin (**dependent on PRS/SRS BW**) and frequency drift margin.
* Option 2: (vivo)
* (4 values): 20Tc, 48Tc, 80TC and 128Tc.
* Option 3: (CATT)
* (4 values): within [0, X] and X is no larger than 30 Tc.
* **Option 4**: (Huawei)
* (5 values): {0, 2, 4, 6, 8}Tc for PRS/SRS BW of 100MHz (FR1) and 200MHz (FR2).
* For smaller BW, the margin values are scaled by a factor as in Rel-16 assumption.
* Recommended WF
* *Need more discussion*

**Discussions:**

Huawei: We are also open to option 1. We are fine with either option 1 or option 2.

Qualcomm: The value is related to the calibration margin in Rel-16. We can further refine the values in second round. We can further discuss the range extension.

Vivo: we need decide the range depending on the calibration error and typical use case. We are open to consider smaller values. We are not sure about all the values in Option 1. We should consider the reasonable granularity and maybe 8 values are OK.

CATT: the general principle, the timing marging should be smaller than RF margin in Rel-16. Some applicability rules should be defined.

Ericsson: when we define the values, we should minimize the value number.

Nokia: agree with Ericsson. The number should be limited. The range is important to address first. The bandwidth scaling is important and maybe some values does not apply to certain bandwidth.

Qualcomm: To CATT, Ericsson and Nokia, the second bullet gives the applicability.

**Agreement:** Down-select to Option 1 for further discussion on

* The range of timing error margins
* The granularity
  + The granularity does not need to be constant
* FFS how to count frequency drift margin
* FFS on the number of values

**Issue 2-1-2 The candidate timing error margins for Tx TEGs (similar as issue 2-1-1)**

Proposals

* Option 1: (Qualcomm)
* (8 values): 1 Tc, 4 Tc, 8 Tc, 16 Tc, 32 Tc, 64 Tc, 2\*64 Tc, 4\*64 Tc.
* The UE will include the selected timing error margins for Tx TEGs in the Tx TEG to SRS association report (including both RRC and LPP).
* Option 2: (CATT)
* (4 values): within [0, X] and X is no larger than 30 Tc.
* Option 3: (Huawei)
* (5 values): {0, 2, 4, 6, 8}Tc for PRS/SRS BW of 100MHz (FR1) and 200MHz (FR2).
* For smaller BW, the margin values are scaled by a factor as in Rel-16 assumption.
* Recommended WF
* *Need more discussion*

**Discussions:**

CATT: propose to reuse the Rx TEG numbers.

Qualcomm: Tx TEG margins are different from Rx TEG.

**Issue 2-1-3 The candidate timing error margins for RxTx TEGs (similar as issue 2-1-1)**

Proposals

* Option 1: (Qualcomm)
* (16 values): 1/2 Tc, 1 Tc, 2 Tc, 4 Tc, 8 Tc, 12 Tc, 16 Tc, 20 Tc, 24 Tc, 32 Tc, 40 Tc, 48 Tc, 56 Tc, 64 Tc, 72 Tc, 80 Tc.
* The applicable timing error margin values that can be selected by the UE are the pre-defined values that are not larger than the sum of the Rel-16 group delay margin (dependent on PRS/SRS BW) and frequency drift margin.
* Option 2: (Huawei)
* (7 values): {0, 2, 4, 8, 12, 16, 24}Tc for min of PRS and SRS BW of 100MHz (FR1) and 200MHz (FR2).
* For smaller BW, the margin values are scaled by a factor as in Rel-16 assumption.
* Recommended WF
* *Need more discussion*

**Issue 2-1-6 Accuracy requirements needed to be defined related to TEG?**

Proposals

* Proposal 1: (CATT, Huawei, Ericsson)
* Define absolute RSTD measurement accuracy requirements when the measurements of reference cell and neighbor cell are within the same Rx TEG.
* Proposal 7: (CATT)
* When defining the absolute accuracy requirements of RSTD and the relative accuracy requirements of UE Rx-Tx time difference, the simulation results of RSTD in R16 can be reused.
* Proposal 10: (Ericsson)
* Rel. 16 measurement accuracy applies to UEs not supporting multiple Rx TEGs.

**Discussions:**

Qualcomm: we support #1 and #7. For #10, we have already had RAN4 agreement. The proposal is not needed.

Hauwei: support #1. For #7 we propose to remove Rx-Tx part. For #10, it is correct. I am not sure if it has already been agreed.

Vivo: the simulation results for Rx-Tx can also be reused.

Ericsson: Support #1. For #7, we need further discuss on Rx-Tx. For #10, there is situation for power saving. We need make sure what requirements apply to UE for some cases.

Huawei: We need decide what Rel-16 simultaion results can be reused. It is more relevant to reuse Rx-Tx results. For #10, we propose to add “measurement for one resource”.

Nokia: why should we determine the relative accuracy requirements?

Vivo: for TEG, we need have relative to compare two TEG measurements.

**Agreement:**

* Define absolute RSTD measurement accuracy requirements when the measurements of reference cell and neighbor cell are within the same Rx TEG.
* When defining the absolute accuracy requirements of RSTD, the simulation results of RSTD in R16 can be reused.
* Proposal 2: (Ericsson)
* Define measurement accuracy requirements for difference between two RSTD measurements, where for each RSTD measurement same Rx TEG is used for both target and reference TRP.
* Proposal 3: (CATT)
* Define relative UE/gNB Rx-Tx time difference measurement accuracy requirements when the two measurements are within the same Rx TEG.
* Proposal 4: (Huawei)
* Discuss whether to define relative UE Rx-Tx accuracy requirements with timing error for the case where two measurements are in same RxTx TEG.
* Proposal 5: (Ericsson)
* Define measurement accuracy requirements for Rx-Tx measurement when same TEG is used for Rx and Tx measurement.
* Proposal 8: (Huawei)
* RAN4 to discuss whether the measurement associated with a TEG should meet 2Rx requirement, or a relaxed 1Rx requirement.
* Proposal 6: (Ericsson)
* Define measurement accuracy requirements for Rx-Tx measurement when different TEG is used for Rx and Tx measurement.
* Proposal 9: (Ericsson)
* Introduce measurement accuracy requirements for timing difference between SRS transmissions performed with same or different UE Tx TEGs.
* Recommended WF
* *Need more discussion*

**Core part:**

**Issue 1-2-1 Clarification on “PRS resource” for defining the PRS collision with other functions in RRC\_INACTIVE state**

*Agreement in RAN4#102e meeting:*

|  |
| --- |
| **The value of X regarding collision of other functions**  *Agreements:*   * If PRS is outside initial DL BWP.   + X=0.5ms if one or both of the serving cell and PFL is in FR1   + X=0.25ms if both the serving cell and PFL are in FR2 * If PRS is within initial DL BWP.   + X=0 * FFS: the definition of “PRS resource” for defining the collision between PRS resource and other DL signals/channels. |

Proposals

* Option 1: (Qualcomm)
* Definition of already accounts for expectedRSTD and expectedRSTD-uncertainty, following the calculation method in TS 38.214, section 5.1.6.5. Therefore, the starting and ending times of PRS resources should already account for these parameters.
* Option 2: (CATT)
* Update the PRS collision condition in RRC\_INACTIVE state as below:
* Collision/overlap between other DL signals/channels and PRS symbol in RRC\_INACTIVE state occurs when:
  + - * Any other DL signals/channel occurs within the PRS symbol or
      * Any other signals/channel occurs within X symbols before the PRS symbol or
      * Any other signals/channel occurs within X symbols after the PRS symbol.
* Option 3: (OPPO)
* For defining PRS collisions, “PRS resource” is the time window Tcenter +[-W, W+L], where
* Tcenter = TREF +1 millisecond×N+*nr-DL-PRS-ExpectedRSTD*×4×Ts, is the center of PRS search window
* W= *nr-*DL*-PRS-ExpectedRSTD-Uncertainty*×R, is the half of PRS search window
* L is the time duration of PRS resource
* Option 4: (vivo, Huawei)
* Specify that a PRS resource which is used to define the collision between PRS resource and other DL signals/channels is taking into account nr-DL-PRS-ExpectedRSTD-Uncertainty and nr-DL-PRS-ExpectedRSTD.
* Option 5: (Nokia)
* The length of the PRS resource for determining the overlap with other DL signals/channels, includes measurement time and processing time of the PRS symbols of the same PRS occasion, takes into account the PRS processing type (slot level, symbol level) and includes expectedRSTD-uncertainty.
* Option 6: (Ericsson)
* No need to further define “PRS resource” and the editor’s note in clause 5.6.1, 38.133 is removed.
* Recommended WF
* *Need more discussion*

**Issue 1-2-6 PRS measurement window in RRC\_INACTIVE state**

Proposals

* Option 1: (Huawei)
* Requirements for PRS measurement in INACTIVE apply provided that all PRS resources on the same PFL are configured within [M] separate windows within Tavailable, where each window is up to [L] ms. FFS for M, L and the location of the windows.
* Recommended WF
* *Need more discussion*

##### 9.20.1.1 UE Rx/Tx and/or gNB Rx/Tx timing delay mitigation

**R4-2208025 Open issues in core requirements for NR positioning - Rx/Tx timing error mitigation**

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

**Decision: Noted.**

**R4-2208210 Discussion on UE Rx/Tx and/or gNB Rx/Tx timing delay mitigation**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208725 UE RxTx and gNB RxTx timing delay mitigation**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208800 Remain issues on timing delay error mitigation**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2209219 Discussion on timing error mitigation for positioning**

*Type: LS out For: Approval  
 to RAN1, RAN2, RAN3  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209220 CR on measurement period requirements with multiple Rx TEGs**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2361 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211062 (from R4-2209220).**

**R4-2211062 CR on measurement period requirements with multiple Rx TEGs**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2361 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

**R4-2210092 Remaining issues on Rx/Tx delay mitigation.**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Temporal validity of Tx and RxTx TEGs

**Decision: Noted.**

##### 9.20.1.2 Latency reduction of positioning measurement

**R4-2208026 Open issues in core requirements for NR positioning - latency reduction**

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

**Decision: Noted.**

**R4-2208211 Discussion on latency reduction of positioning measurement**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208212 CR on PRS-RSRP measurement period without gaps**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2303 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Revised to R4-2211052 (from R4-2208212).**

**R4-2211052 CR on PRS-RSRP measurement period without gaps**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2303 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2208213 CR on PRS-RSRPP measurement period requirements**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2304 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Revised to R4-2211053 (from R4-2208213).**

**R4-2211053 CR on PRS-RSRPP measurement period requirements**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2304 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2208372 Discussion on latency reduction of positioning measurements**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208527 Discussion on gapless based positioning measurement**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2208798 Remain issues on latency reduction of positioning measurement**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2209221 Discussion on PRS measurement outside MG**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209222 CR on requirements for UE Rx-Tx measurement with reduced latency**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2362 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211054 (from R4-2209222).**

**R4-2211054 CR on requirements for UE Rx-Tx measurement with reduced latency**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2362 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

**R4-2209223 CR on RSTD measurement period requirements without gaps**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2363 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211055 (from R4-2209223).**

**R4-2211055 CR on RSTD measurement period requirements without gaps**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2363 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

**R4-2210093 Remaining issues on latency reduced positioning.**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Reduced Rx beam sweeping factor and reduced number of samples for gapless PRS measurement

**Decision: Noted.**

##### 9.20.1.3 Measurement in RRC\_INACTIVE state

**R4-2208027 Open issues in core requirements for NR positioning - measurements in RRC\_INACTIVE**

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

**Decision: Noted.**

**R4-2208214 Discussion on measurement in RRC\_INACTIVE state**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208215 CR on the PRS and RRM measurement requirements in RRC\_INACTIVE state**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2305 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Revised to R4-2211063 (from R4-2208215).**

**R4-2211063 CR on the PRS and RRM measurement requirements in RRC\_INACTIVE state**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2305 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2208373 Discussion on positioning measurements in RRC\_INACTIVE state**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208726 Positioning measurements in RRC\_INACTIVE state**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208799 Remain issues on PRS measurement in RRC\_INACTIVE state**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208801 CR to 38.133 on positioning measurement requirements in RRC\_INACTIVE state**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2335 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Revised to R4-2211064 (from R4-2208801).**

**R4-2211064 CR to 38.133 on positioning measurement requirements in RRC\_INACTIVE state**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2335 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Agreed.**

**R4-2209224 Discussion on positioning requirements in RRC\_INACTIVE**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209225 CR on general requirements for PRS measurements in RRC Inactive**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2364 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Merged (with R4-2208801).**

**R4-2209226 CR on inter-frequency RRM requirements due to PRS measurement in INACTIVE**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2365 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

**R4-2210094 Remaining issues on RRC\_INACTIVE state positioning**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Reduced number of samples, reduced beam sweeping factor, PRS collision with other DL signals/channels and impact of TEG on RRC\_INACTIVE RRM core requirement

**Decision: Noted.**

**R4-2210173 Correction to PRS measurement requirements in RRC inactive state**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2400 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

The CR on correction to PRS measurement requirements in RRC inactive state.

**Decision: Revised to R4-2211065 (from R4-2210173).**

**R4-2211065 Correction to PRS measurement requirements in RRC inactive state**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2400 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

The CR on correction to PRS measurement requirements in RRC inactive state.

**Decision: Agreed.**

##### 9.20.1.4 Impact on existing UE positioning and RRM requirements

**R4-2209227 Discussion on impacts to other RAN4 requirements**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209228 CR to introduce per-FR MG for PRS measurement**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2366 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

**R4-2209787 Correction to RSTD and UE Rx-Tx measurement period requirement in RRC connected state**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2387 rev Cat: F (Rel-17)  
  
 Source: Ericsson Inc.*

**Decision: Not pursued.**

**R4-2210095 Additional path measurement and RRM core requirement**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Additional path measurement applies to RRC\_CONNECTED, RRC\_INACTIVE states. There is no impact on core requirement due to additional path measurements.

**Decision: Noted.**

##### 9.20.1.5 Enhancements of A-GNSS positioning

##### 9.20.1.6 Others

**R4-2208216 Reply LS on the dropping rule of DL signals/channels for capability 1B and 2**

*Type: LS out For: Approval  
 to RAN1  
 Source: CATT*

**Decision: Revised to R4-2211056 (from R4-2208216).**

**R4-2211056 Reply LS on the dropping rule of DL signals/channels for capability 1B and 2**

*Type: LS out For: Approval  
 to RAN1  
 Source: CATT*

**Decision: Approved.**

**R4-2208727 on PRS measurement outside the measurement gap**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

This paper discusses the matter of PRS measurement outside the measurement gap.

**Decision: Noted.**

**R4-2209229 CR on scheduling restriction for PRS-RSRPP measurement**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2367 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211057 (from R4-2209229).**

**R4-2211057 CR on scheduling restriction for PRS-RSRPP measurement**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2367 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

**R4-2210096 Addtional dropping rule for cap 1b and cap2 UE during gapless PRS measurement**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

No additional dropping rule to be defined for Cap 1B and cap 2 UEs for gapless PRS measurement.Annex also contains reply LS to R1-2202842, “LS on the dropping rule of DL signals/channels for capability 1B and 2.”, Huawei.

**Decision: Noted.**

#### 9.20.2 RRM performance requirements

**R4-2208222 General discussion on R17 ePOS perf part**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

##### 9.20.2.1 UE Rx/Tx and/or gNB Rx/Tx timing delay mitigation

**R4-2208217 Discussion on performance requirements for UE Rx/Tx and/or gNB Rx/Tx timing delay mitigation**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208804 Discussion on performance requirements for timing delay error mitigation**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2209230 Discussion on accuracy requirements for TEG**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209711 Discussion on timing error mitigation for NR positioning**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on timing error mitigation for NR positioning

**Decision: Noted.**

**R4-2210097 UE Rx/Tx timing delay mitigation performance**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

impact of TEG on accuracy requirement.

**Decision: Noted.**

**R4-2210098 Condition for RSTD and UE Rx-Tx time difference measurement reporting**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

differential measurement reporting condition for RSTD and UE Rx-Tx time difference measurement

**Decision: Revised to R4-2211168 (from R4-2210098).**

**R4-2211168 Condition for RSTD and UE Rx-Tx time difference measurement reporting**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

differential measurement reporting condition for RSTD and UE Rx-Tx time difference measurement

**Decision: Revised to R4-2211207 (from R4-2211168).**

**R4-2211207 Condition for RSTD and UE Rx-Tx time difference measurement reporting**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

differential measurement reporting condition for RSTD and UE Rx-Tx time difference measurement

**Decision: Postponed.**

##### 9.20.2.2 Latency reduction of positioning measurement

**R4-2208028 Additional simulation results with reduced number of PRS samples**

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

**Decision: Noted.**

**R4-2208218 Discussion on performance requirements for latency reduction of positioning measurement**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208526 Discussion on test cases for latency reduction of positioning measurement**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2208802 Discussion on performance requirements for latency reduction of positioning measurements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208806 Draft CR to 38.133 Introduction of positioning measurement accuracy requirements for reduced number of samples**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

**Decision: Postponed.**

**R4-2208807 Draft CR to 38.133 Introduction of test case for PRS measurements without gaps**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

**Decision: Postponed.**

**R4-2208808 Further simulation results for PRS measurement with reduced number of samples**

*Type: discussion For: Information  
 Source: vivo*

**Decision: Noted.**

**R4-2209231 Discussion on accuracy and tests for latency reduction**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2210057 Discussion on performance requirement for latency reduction**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2210099 Latency reduction performance requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Rel. 16 accuracy requirement applies to Reduced Rx beam sweeping factor for positioning measurement. Rel. 16 accuracy requirement applies to reduced number of samples for positioning measurement under the identified conditions for reduce number of samples

**Decision: Noted.**

**R4-2210100 Addition of Latency reduction performance requirements**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Rel. 16 accuracy requirement applies to Reduced Rx beam sweeping factor for positioning measurement. Rel. 16 accuracy requirement applies to reduced number of samples for positioning measurement under the identified conditions for reduce number of samples

**Decision: Postponed.**

##### 9.20.2.3 Measurement in RRC\_INACTIVE state

**R4-2208070 Discussion on performance requirements for PRS Measurement in RRC\_INACTIVE**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208219 Discussion on the performance requirements for the PRS measurement in RRC\_INACTIVE state**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2208525 Discussion on test cases for positioning measurement in RRC\_INACTIVE state**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2208803 Discussion on performance requirements for PRS measurement in RRC\_INACTIVE**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2209232 Discussion on accuracy and tests for PRS measurement in RRC\_INACTIVE**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2209712 Discussion on measurement in RRC\_INACTIVE state**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on positioning measurements in RRC\_Inactive

**Decision: Noted.**

**R4-2210101 RRC inactive state performance requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Accuracy requirement for RRC\_CONNECTED state apply to RRC\_INACTIVE state positioning

**Decision: Noted.**

**R4-2210102 Accuracy requirement in RRC inactive state**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Accuracy requirement for RRC\_INACTIVE state positioning measurement.

**Decision: Revised to R4-2211066 (from R4-2210102).**

**R4-2211066 Accuracy requirement in RRC inactive state**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Accuracy requirement for RRC\_INACTIVE state positioning measurement.

**Decision: Revised to R4-2211206 (from R4-2211066).**

**R4-2211206 Accuracy requirement in RRC inactive state**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Accuracy requirement for RRC\_INACTIVE state positioning measurement.

**Decision: Endorsed.**

##### 9.20.2.4 Impact on existing UE positioning and RRM requirements

**R4-2209233 Discussion on TCs for PRS measurement outside MG**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2210103 Additional path measurement report mapping for existing positioning measurements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Additional path report mapping for DL RSTD. Additional path report mapping for UE Rx-Tx time difference.

**Decision: Noted.**

**R4-2210104 Additional path measurement report mapping for RSTD, UE Rx-Tx time difference measurement.**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

measurement report mapping for up to 8 additional paths.

**Decision: Revised to R4-2211058 (from R4-2210104).**

**R4-2211058 Additional path measurement report mapping for RSTD, UE Rx-Tx time difference measurement.**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

measurement report mapping for up to 8 additional paths.

**Decision: Revised to R4-2211205 (from R4-2211058).**

**R4-2211205 Additional path measurement report mapping for RSTD, UE Rx-Tx time difference measurement.**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

measurement report mapping for up to 8 additional paths.

**Decision: Endorsed.**

##### 9.20.2.5 Enhancements of A-GNSS positioning

**R4-2208220 Introduction of BDS B2a and B3I signals inTS 36.171 requirements for support of A-GNSS**

*Type: draftCR For: Endorsement  
 36.171 v17.0.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT, CAICT, CENC*

**Decision: Revised to R4-2211130 (from R4-2208220).**

**R4-2211130 Introduction of BDS B2a and B3I signals inTS 36.171 requirements for support of A-GNSS**

*Type: draftCR For: Endorsement  
 36.171 v17.0.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT, CAICT, CENC*

**Decision: Endorsed.**

**R4-2208221 Introduction of BDS B2a and B3I signals inTS 38.171 requirements for support of A-GNSS**

*Type: draftCR For: Endorsement  
 38.171 v17.0.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT, CAICT, CENC*

**Decision: Revised to R4-2211131 (from R4-2208221).**

**R4-2211131 Introduction of BDS B2a and B3I signals inTS 38.171 requirements for support of A-GNSS**

*Type: draftCR For: Endorsement  
 38.171 v17.0.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT, CAICT, CENC*

**Decision: Endorsed.**

##### 9.20.2.6 Others

**R4-2208029 On performance requirements for PRS-RSRPP**

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

**Decision: Noted.**

**R4-2208805 Discussion on performance requirements for PRS-RSRPP**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2209234 Discussion on accuracy requirements and TCs for PRS-RSRPP**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211061 (from R4-2209234).**

**R4-2211061 Discussion on accuracy requirements and TCs for PRS-RSRPP**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Approved.**

**R4-2210056 Discussion on accuracy requirements for PRS-RSRPP**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2210105 On performance requirements for DL PRS-RSRPP measurement.**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

support report mapping for measurement up to 8 additional paths. consider propagation paths similar to PRS RSRP for performance requirement.

**Decision: Noted.**

**R4-2210171 Work split on performance requirements for positioning enhancement**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Rapporteur input on work split for CRs and time plan on performance requirements including accuracy requirements, test cases and side conditions.

**Decision: Revised to R4-2211060 (from R4-2210171).**

**R4-2211060 Work split on performance requirements for positioning enhancement**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Rapporteur input on work split for CRs and time plan on performance requirements including accuracy requirements, test cases and side conditions.

**Decision: Approved.**

**R4-2210172 Big DraftCR Template for Performance Requirements for Positioning Enhancement**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Rapporteur input: Big DraftCR template on performance requirements for Positioning Enhancement

**Decision: Endorsed.**

**R4-2211059 Big DraftCR Template for Performance Requirements for Positioning Enhancement**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Rapporteur input: Big DraftCR template on performance requirements for Positioning Enhancement

**Decision: Withdrawn.**

### 9.21 Multi-Radio Dual-Connectivity enhancements

#### 9.21.1 RRM core requirement maintenance

**[103-e][218] LTE\_NR\_DC\_enh2, AI 9.21 – Han Jing**

**R4-2210290 Email discussion summary for [103-e][218] LTE\_NR\_DC\_enh2**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210487 (from R4-2210290).**

**R4-2210487 Email discussion summary for [103-e][218] LTE\_NR\_DC\_enh2**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210605 | WF on R17 further Multi-RAT Dual-Connectivity enhancements, | Huawei, HiSilicon |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2208584 | R4-2211067 | CR on Efficient activation/de-activation mechanism for Scells | Nokia | Revised |  |
| R4-2208968 | R4-2211068 | Draft CR on A-TRS based SCell activation and deactivated delay requirements with multiple downlink Scell | Huawei, Hisilicon | Revised |  |
| R4-2208971 | R4-2211069 | Draft CR on interruptions at A-TRS based SCell activation/deactivation with multiple downlink SCells | Huawei, Hisilicon | Revised |  |
| R4-2208972 | R4-2211070 | Draft CR on interruptions at A-TRS based SCell activation/deactivation (36.133) | Huawei, Hisilicon | Revised |  |
| R4-2207753 | R4-2211193 | TS38.133 CR on SCG activation/deactivation | Apple | Revised | Please focus on 8.2.4.2.16 |
| R4-2207754 |  | TS36.133 CR on SCG activation/deactivation | Apple | Agreed |  |
| R4-2207872 | R4-2211071 | Maintenance CR for SCG activation on 38.133 R17 | MTK | Revised | Please focus on 8.1.3.2 ,9.3.4, 9.3.5 |
| R4-2207873 | R4-2211072 | Maintenance CR for SCG activation delay on 36.133 R17 | MTK | Revised |  |
| R4-2208052 | R4-2211073 | DraftCR to 38133 for interruptions due to RRM measurements on deactivated SCG | Intel | Revised | Please Remove bracket |
| R4-2208053 | R4-2211074 | DraftCR to 36133 for interruptions due to RRM measurements on deactivated SCG | Intel | Revised | Please Remove bracket |
| R4-2208586 | R4-2211075 | CR on Efficient activation/de-activation mechanism for one SCG (section 8) | Nokia | Revised | Please focus on 8.1.1, 8.1.2, 8.1.3, 8.2.4, 8.5, 8.5.2, 8.5.3, 8.2 and New 8.3.1x |
| R4-2208587 | R4-2211194 | CR on Efficient activation/de-activation mechanism for one SCG (section 9) | Nokia | Revised | 9.2.5 |
| R4-2208645 | R4-2211076 | CR to maintain SCG activation and deactivation delay requirements in TS 38.133 | Oppo | Revised | Please additional revise the section number 8.17.2 to 8.17.3 |
| R4-2208970 |  | Correction on beam failure detection on deactived PSCell | Huawei | Agreed |  |
| R4-2210179 | R4-2211163 | Update to UE transmit requirement under deactivated SCG | Ericsson | Revised |  |
| R4-2208815 | R4-2211077 | CR 38.133 corrections on L1/L3 measurement requirements for deactivated SCG | vivo | Revised | Please focus on 8.5.1, 8.10.2 and 8.17.2 |
| R4-2208589 | R4-2211195 | CR for TCI state indication with direct SCell activation | Nokia | Revised |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210605 |  | WF on R17 further Multi-RAT Dual-Connectivity enhancements, | Huawei, HiSilicon | Approved |  |
| R4-2211067 |  | CR on Efficient activation/de-activation mechanism for Scells | Nokia | Agreed |  |
| R4-2211068 |  | CR on A-TRS based SCell activation and deactivated delay requirements with multiple downlink Scell | Huawei, Hisilicon | Agreed | This is CR the title should be changed |
| R4-2211069 |  | Draft CR on interruptions at A-TRS based SCell activation/deactivation with multiple downlink SCells | Huawei, Hisilicon | Not pursued |  |
| R4-2211070 |  | Draft CR on interruptions at A-TRS based SCell activation/deactivation (36.133) | Huawei, Hisilicon | Agreed | This is CR the title should be changed |
| R4-2211193 |  | TS38.133 CR on SCG activation/deactivation | Apple | Endorsed |  |
| R4-2211071 |  | Maintenance CR for SCG activation on 38.133 R17 | MTK | Agreed |  |
| R4-2211072 |  | Maintenance CR for SCG activation delay on 36.133 R17 | MTK | Agreed |  |
| R4-2211073 |  | DraftCR to 38133 for interruptions due to RRM measurements on deactivated SCG | Intel | Endorsed |  |
| R4-2211074 |  | DraftCR to 36133 for interruptions due to RRM measurements on deactivated SCG | Intel | Endorsed |  |
| R4-2211075 |  | CR on Efficient activation/de-activation mechanism for one SCG (section 8) | Nokia | Agreed | CR |
| R4-2211194 |  | CR on Efficient activation/de-activation mechanism for one SCG (section 9) | Nokia | Agreed | CR |
| R4-2211076 |  | CR to maintain SCG activation and deactivation delay requirements in TS 38.133 | Oppo | Agreed |  |
| R4-2211163 |  | Update to UE transmit requirement under deactivated SCG | Ericsson | Postponed | CR |
| R4-2211077 |  | CR 38.133 corrections on L1/L3 measurement requirements for deactivated SCG | vivo | Agreed |  |
| R4-2211195 |  | CR for TCI state indication with direct SCell activation | Nokia | Agreed | CR |

**R4-2210605 WF on R17 further Multi-RAT Dual-Connectivity enhancements**

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

**Decision: Approved.**

**GTW on May 12**

**Issue 2-1-1: UE processing time (Tprocessing) in PSCell activation delay**

Background

The following agreements are made in [R4-2207006].

|  |
| --- |
| **Issue 2-2-1: UE processing time (Tprocessing) in PSCell activation delay**  **GTW session (February 24, 2022)**   * Agreements   + When PSCell is activated from deactivated state     - If any PSCell parameter is modified       * Tprocessing = [20ms].     - Otherwise       * Tprocessing = [5 or 10ms].     - Note: further discuss if Tprocessing or a different term shall be used |

* Proposals

**If any PSCell parameter is modified,**

* + Option 1 (QC, Nokia, vivo): Tprocessing = 20ms.
* Recommended WF
  + Further discussion

**Discussions:**

Nokia: why does UE need additional 5ms? Why is 5ms not enough?

Ericsson: It just looks 5ms to be argued. 5ms is ten percent of total delay. We would like to what the 5ms is added for.

Huawei: In our understanding, UE needs to warm up the RF chain. This is minimum requirements. We prefer 10ms processing time.

Apple: Support 10ms. Agree with Huawei for justification, retuning.

Nokia: We are fine and understand that some time is needed for warm-up. RF is the reason to take more time. Why would we need to retune? What is the difference between activation compared to activation/deactivation of SCell?

Qualcomm: Support 10ms. The main difference PCell activation and SCell activation. PCell has both downlink and uplink. We should shut down everything. That is the reason that we need more time. Regarding infra vendors, PCell will receive the RPACH if UE can finalize before 10ms.

Huawei: the difference between Scell and PCell activation. For SCell the timing is based on SSB. For PCell the more time is needed to stabilized the timing.

Vivo: Support 10ms. The 10ms can provide flexibility.

Ericsson: previously we propose 0 ms. 10 percent will impact the offloacing. We compromise to 5ms. We should keep the good performance for the feature.

Nokia: We understand the reason to reuse the activation of PCell. The delay here is the same like to add the PSCell. It conflicts the purpose of WID. UE is always allowed for T\_delta. We should not account twice.

Qualcomm: Looking at the whole feature, the RAN4 requirements if from the time of receive the signaling to transmit the PRACH and the additional 5 ms may not degrade the feature.

**Agreements:** confirm the values

* When PSCell is activated from deactivated state
  + If any PSCell parameter is modified
    - Tprocessing = 20 ms.
  + Otherwise
    - Tprocessing = 5 ms.
  + Note: further discuss if Tprocessing or a different term shall be used

**Issue 2-3-1: Interruption due to PSCell activation/deactivation**

Background: It is agreed in RAN4#101e WF [R4-2120334]

|  |
| --- |
| **Issue 2-3-1: Baseline for interruption due to PSCell activation/deactivation**  If PSCell is added and directly enter the activated status   * + Existing requirements for interruption due to PSCell **addition/release** can be used as baseline, i.e., 1ms interruption length.   If PSCell is activated from a deactivated status   * + Option 1: existing requirements for interruption due to PSCell **addition/release** can be used as baseline, i.e., 1ms interruption length.   + Option2: interruption requirement for Scell activation can be reused (Table 8.2.4.2.2-1) |

* Proposals
* If PSCell is activated from a deactivated status
  + Option 1 (Apple, MTK, QC, vivo, Huawei): Existing requirements for interruption due to PSCell addition/release can be used as baseline, i.e., 1ms interruption length
  + Option 2(Ericsson, Nokia): Existing requirements for interruption due to Scell activation/deactivation can be used as a baseline.
* Recommended WF
  + Further discussion

**Discussions:**

Nokia: what is difference to do PSCell addition and SCell activation?

Ericsson: PSCell addition is different from SCG activation/de-actvation.The PSCell activation is much similar to SCell activation due to data transmission. What is the reason to apply PSCell addition requirement?

Huawei: the Rel-17 feature is triggered by RRC rather than MAC-CE. UE may need time for warm-up. We prefer the generic rule.

Qualcomm: similar as issue discussed before. UE has both uplink and downlink. UE may need bring up or shut down the RF due to power saving.

Apple: Support Option 1. We understand the concern from vendor side. This procedure is very similar to PSCell addition. UE may switch off the RF chain. We do not expect this activation/de-activation is very frequent.

Mediatek: Parameters like RF parameter will be modified. We support Opiton 1.

OPPO: support option 1.

Ericsson: this parameter change is only caused by one RRC signaling. Will it impact RF parameter?

Qualcomm: it does not happen very frequently. There is no much data for transmission. We should have balance between power saving and data transmission. 0.5ms is not really issue.

Nokia: The latency is bascaily the same as PSCell.

Mediatek: agree with Qualcomm. To Ericsson, RF parameter may be changed and it is up to gNB implementation. gNB can monitor. UE needs more time.

Qualcomm: RAN2 discusses … and observes the activation does not happen very frequently.

Nokia: activation/de-activation does not happen very often for RRC based. Unless the parameter is changed, UE may not change the parameter as normal case.

Intel: Since this is the RRC based activation there is not data transmission. 1ms length does not matter.

Nokia: the PCell may be scheduled during the activation.

**Agreement:**

* If PSCell is activated from a deactivated status
  + Existing requirements for interruption due to PSCell addition/release can be used as baseline, i.e., 1ms interruption length

**Topic #3: Test case**

Please directly comment on the possible test cases listed in the below table.

|  |  |  |  |
| --- | --- | --- | --- |
| Index |  | **Note** | **Company’s view** |
| **Temporary RS based SCell activation** | | | |
| 1 | A.4 EN-DC tests with NR cell in FR1  A.4.5.3.x1 Fast SCell Activation and deactivation of known SCell in FR1 for 160ms SCell measurement cycle |  | Huawei: ok  MTK: ok |
| 2 | A.4 EN-DC tests with NR cell in FR1  A.4.5.3.x2 Fast SCell Activation and deactivation of known SCell in FR1 for 640 ms SCell measurement cycle |  | Huawei: ok  MTK: ok |
| 3 | A.4 EN-DC tests with NR cell in FR1  A.4.5.3.x3 Fast SCell Activation and deactivation of multiple known SCells in FR1 with single activation/deactivation command (if needed) | measurement cycles of the two to-be-activated SCells are same (e.g., 160ms) | Huawei: ok  MTK: depend on outcome of core part. |
| 4 | A.5 EN-DC tests with NR cell in FR2  A.5.5.3.X1 Fast SCell Activation and deactivation of SCell in FR2 intra-band | PSCell and being activated SCell are in the same band in FR2. | Huawei: ok  MTK: ok |
| 5 | A.5 EN-DC tests with NR cell in FR2  A.5.5.3.X2 Fast SCell Activation and deactivation of SCell in FR2 in inter-band | PSCell in FR1 and SCell in FR2; SCell is known; periodic CSI-RS is used for CSI reporting | Huawei: ok  MTK: Not needed. UE behaviour on using TRS to active a SCell is the same as TC4. Besides, due to OTA test limitation, this test is not feasible now. |
| 6 | A.5 EN-DC tests with NR cell in FR2  A.5.5.3.X3 Fast SCell Activation and deactivation of multiple known SCells in FR2 (if needed) | PSCell and two known SCells are in the same FR2 band | Huawei: ok  MTK: depend on outcome of core part. |
| 7 | A.6 NR standalone tests with NR cell in FR1  A.6.5.3.X1 SCell Activation and deactivation of known SCell in FR1 in non-DRX for 160ms SCell measurement cycle |  | Huawei: ok  MTK: ok |
| 8 | A.6 NR standalone tests with NR cell in FR1  A.6.5.3.X2 SCell Activation and deactivation of known SCell in FR1 in non-DRX for 640 ms SCell measurement cycle |  | Huawei: ok  MTK: ok |
| 9 | A.7 NR standalone tests with NR cell in FR2  A.7.5.3.X1 Fast SCell Activation and deactivation for SCell in FR2 intra-band | PCell and being activated SCell are in the same FR2 band. | Huawei: ok  MTK: ok |
| 10 | A.7 NR standalone tests with NR cell in FR2  A.7.5.3.X2 Fast SCell Activation and deactivation for SCell in FR2 inter-band | PCell and SCell are in FR2 inter-band; SCell is known; periodic CSI-RS is used for CSI reporting | Huawei: ok  MTK: Not needed. UE behaviour on using TRS to active a SCell is the same as TC9. |
| **Efficient activation/de-activation mechanism for one SCG** | | | |
|  | PSCell activation/deactivation | | |
| 11 | A.4 EN-DC tests with NR cell in FR1  A.4.5.X1 PSCell activation and deactivation delay | RACH-less based; PSCell is known;  RLM/BFD is configured;  no PSCell parameter is modified. | Huawei: ok  MTK: ok |
| 12 | A.5 EN-DC tests with NR cell in FR2  A.5.5.X1 PSCell activation and deactivation delay | RACH-less based; PSCell is known;  RLM/BFD is configured;  No PSCell parameter is modified. | Huawei: ok  MTK: ok |
| 13 | A.7 NR standalone tests with NR cell in FR2  A.7.5.X1 PSCell activation and deactivation delay | RACH-less based; PSCell is known;  RLM/BFD is configured;  No PSCell parameter is modified. | Huawei: ok  MTK: ok |
| 14 | A.4 EN-DC tests with NR cell in FR1  A.4.5.X2 PSCell activation and deactivation delay | RACH based PSCell activation procedure;  PSCell is known. | Huawei: not prefer. Tsearch for unknown SCell in RACH based case is for PSSS/SSSS detection, this is already verified in multiple other tests, therefore we suggest to only verify RACH-less based PSCell activation procedure.  MTK: not support. We suggest to limit to RACH-less based PSCell activation, as for RACH-based based PSCell activation, only Tprocessing is different from R15/R16 PSCell addition, which can be test in TCs for RACH-less based PSCell activation. |
| 15 | A.5 EN-DC tests with NR cell in FR2  A.5.5.X2 PSCell activation and deactivation delay | RACH based PSCell activation procedure;  PSCell is known. | Huawei: not prefer  MTK: not support. |
| 16 | A.7 NR standalone tests with NR cell in FR2  A.7.5.X2 PSCell activation and deactivation delay | RACH based PSCell activation procedure;  PSCell is known | Huawei: not prefer  MTK: not support. |
| 17 | A.4 EN-DC tests with NR cell in FR1  A.4.5.X3 PSCell activation and deactivation delay | RACH based PSCell activation procedure;  PSCell is unknown. | Huawei: not prefer  MTK: not support. |
| 18 | A.5 EN-DC tests with NR cell in FR2  A.5.5.X3 PSCell activation and deactivation delay | RACH based PSCell activation procedure;  PSCell is unknown. | Huawei: not prefer  MTK: not support. |
| 19 | A.7 NR standalone tests with NR cell in FR2  A.7.5.X3 PSCell activation and deactivation delay | RACH based PSCell activation procedure;  PSCell is unknown. | Huawei: not prefer  MTK: not support. |
|  | Interruption due to RRM measurement and RLM/BFD on deactivated SCG | | |
| 20 | A.4 EN-DC tests with NR cell in FR1  A.4.5.2.X1 E-UTRAN – NR FR1 interruptions during measurements on deactivated NR PSCell | 1. UE is also configured with RLM or BFD on the deactivated PSCell;  2. Both interruption requirements due to measurement and RLM/BFD on PSCell are verified  3. Sync ENDC is considered | Huawei: ok  MTK: We think we don’t need an independent test case. This can be tested as one step in TC for SCG activation/deactivation delay just like we test interruption due to CSI and RRM measurements on dormant SCells in one step of SCell dormancy switch. |
| **Conditional PSCell change and addition** | | | |
| 21 | A.4.5.X1 Conditional PSCell addition and release delay (FR1 ENDC)  A.4.5.X1.1 Addition and Release Delay of known NR PSCell |  | Huawei: ok  MTK: As the test case are aimed to test the function, UE can be verified to support the function if one of the TCs is passed. We are fine to define one TC for FR1 EN-DC, one for FR2 EN-DC, one for SA, but UE only needs to test one of them. |
| 22 | A.5.5.X2 Conditional PSCell addition and release delay (FR2 ENDC)  A.5.5.X2.1 Addition and Release Delay of unknown NR PSCell |  | vivo: The target PSCell shall be a known cell before UE starts to execute conditional PSCell addition. Therefore, the unknown case may not be defined.  Huawei: ok |
| 23 | A.7.5.X3 Conditional PSCell addition and release delay (FR2 SA)  A.7.5.X3.1 Addition and Release Delay of known NR PSCell |  | Huawei: ok  Company B: |

If time allows, the following issues are suggested to be handled as well.

**Issue 2-2-6: Direct SCell activation with TCI state indication**

**Background**

RAN2 LS TCI state indication is received [R2-22038031]. The content is duplicated as below,

|  |
| --- |
| RAN2 would like to inform RAN4 that RAN2 has agreed to add TCI state information in NR RRC IE ServingCellConfig (to support also TCI state indication with direct Scell activation).  The TCI state information could be used for PSCell activation/de-activation mechanism as described in LS R2-2201711. In addition to that, it can also be used for direct Scell activation as requested by RAN4 in LS R4-2017329 [2]. RAN2 understands whether to define requirements for this is up to RAN4. |

* Proposals
  + Option 1a (Huawei): In this WI, don’t define requirements for direct Scell activation with TCI state indication, as this is out of WI scope.
  + Option 1b (MTK): The conclusion in LS R2-2203803 has no impact on delay requirements of PSCell activation and direct Scell activation.
  + Option 2 (Nokia): Include following text in section 8.3.4: ‘If the UE receives TCI state information in NR RRC IE ServingCellConfig the requirements in section 8.3.2 shall be based on the assumption that the TCI state activation command is received at the same time as Scell activation command.’
* Recommended WF
  + Further discussion

**Issue 2-1-1: UE processing time (Tprocessing) in PSCell activation delay**

Background

The following agreements are made in [R4-2207006].

|  |
| --- |
| **Issue 2-2-1: UE processing time (Tprocessing) in PSCell activation delay**  **GTW session (February 24, 2022)**   * Agreements   + When PSCell is activated from deactivated state     - If any PSCell parameter is modified       * Tprocessing = [20ms].     - Otherwise       * Tprocessing = [5 or 10ms].     - Note: further discuss if Tprocessing or a different term shall be used |

* Proposals

**If any PSCell parameter is modified,**

* + Option 1 (QC, Nokia, vivo): Tprocessing = 20ms.
* Recommended WF
  + Further discussion

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | Support Option 1. |
| Vivo | Support Option 1. |
| Huawei | Confirm option 1. |
| Nokia | Option 1 is agreeable. |
| Apple | Option 1. |
| MTK | Option 1. |
| OPPO | Support Option 1. |
| Ericsson | Option 1. |

**If the PSCell is activated from deactivated state without any parameter change,**

* + Option 1 (Apple, MTK, QC, Nokia, vivo, Huawei): Tprocessing = 10ms.
  + Option 2 (Nokia): Tprocessing = 5 ms
* Recommended WF
  + Further discussion

**Issue 2-2-2: Scenarios for derect SCG activation for multiple cells (PSCell+SCell(s))**

* Proposals
  + Option 1(QC):
    - For EN-DC
      * FR1 known PSCell with RACH-based and FR1 known Scell(s)
      * FR1 known PSCell with RACH-less and FR1 known Scell(s)
    - For both EN-DC and NR-DC
      * FR2 known PSCell with RACH-based and FR2 known Scell(s)
      * FR2 known PSCell with RACH-less and FR2 known Scell(s)
  + Option 2(Nokia, vivo): known and unknown PSCell addition (RACH based) + known and unknown Scell(s)
* Recommended WF
  + Further discussion

------------------------------------------------------------------------------------------------------------------------

**R4-2207870 Discussion on R2 LS on TCI state indication**

*Type: discussion For: (not specified)  
 Source: MediaTek (Shenzhen) Inc.*

**Decision: Noted.**

**R4-2208815 CR 38.133 corrections on L1/L3 measurement requirements for deactivated SCG**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2336 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Revised to R4-2211077 (from R4-2208815).**

**R4-2211077 CR 38.133 corrections on L1/L3 measurement requirements for deactivated SCG**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2336 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Agreed.**

##### 9.21.1.1 Efficient activation/de-activation mechanism for SCells

**R4-2207751 On efficient activation/de-activation mechanism for SCells**

*Type: discussion For: (not specified)  
 Source: Apple*

**Decision: Noted.**

**R4-2207868 Discussion on efficient activation/de-activation mechanism for SCell**

*Type: discussion For: (not specified)  
 Source: MediaTek (Shenzhen) Inc.*

**Decision: Noted.**

**R4-2207961 Efficient activation and deactivation mechanism for SCells**

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

**Decision: Noted.**

**R4-2208286 Discussion on effiicient activation/deactivation mechanism for Scells**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Mutiple scell activation requirements discussion

**Decision: Noted.**

**R4-2208374 Discussion on efficient activation/de-activation mechanism for Scells**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

**R4-2208583 Final aspects on Efficient activation/de-activation mechanism for Scells**

*Type: discussion For: Agreement  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208584 CR on Efficient activation/de-activation mechanism for Scells**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2328 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2211067 (from R4-2208584).**

**R4-2211067 CR on Efficient activation/de-activation mechanism for Scells**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2328 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2208967 Discussion on efficient activation/de-activation mechanism for Scells**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2208968 Draft CR on A-TRS based SCell activation and deactivated delay requirements with multiple downlink Scell**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2347 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211068 (from R4-2208968).**

**R4-2211068 Draft CR on A-TRS based SCell activation and deactivated delay requirements with multiple downlink Scell**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2347 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

##### 9.21.1.2 Efficient activation/de-activation mechanism for one SCG

**R4-2207752 On efficient activation/de-activation mechanism for one SCG**

*Type: discussion For: (not specified)  
 Source: Apple*

**Decision: Noted.**

**R4-2207753 TS38.133 CR on SCG activation/deactivation**

*Type: draftCR For: (not specified)  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2211193 (from R4-2207753).**

**R4-2211193 TS38.133 CR on SCG activation/deactivation**

*Type: draftCR For: (not specified)  
 38.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2207754 TS36.133 CR on SCG activation/deactivation**

*Type: draftCR For: (not specified)  
 36.133 v17.5.0 CR- rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2207869 Discussion on efficient activation/de-activation mechanism for one SCG**

*Type: discussion For: (not specified)  
 Source: MediaTek (Shenzhen) Inc.*

**Decision: Noted.**

**R4-2207872 Maintenance CR for SCG activation on 38.133 R17**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2293 rev Cat: F (Rel-17)  
  
 Source: MediaTek (Shenzhen) Inc.*

**Decision: Revised to R4-2211071 (from R4-2207872).**

**R4-2211071 Maintenance CR for SCG activation on 38.133 R17**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2293 rev Cat: F (Rel-17)  
  
 Source: MediaTek (Shenzhen) Inc.*

**Decision: Agreed.**

**R4-2207873 Maintenance CR for SCG activation delay on 36.133 R17**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7150 rev Cat: F (Rel-17)  
  
 Source: MediaTek (Shenzhen) Inc.*

**Decision: Revised to R4-2211072 (from R4-2207873).**

**R4-2211072 Maintenance CR for SCG activation delay on 36.133 R17**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7150 rev Cat: F (Rel-17)  
  
 Source: MediaTek (Shenzhen) Inc.*

**Decision: Agreed.**

**R4-2207962 Efficient activation and deactivation mechanism for one SCG**

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

**Decision: Noted.**

**R4-2208052 DraftCR to 38133 for interruptions due to RRM measurements on deactivated SCG**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Revised to R4-2211073 (from R4-2208052).**

**R4-2211073 DraftCR to 38133 for interruptions due to RRM measurements on deactivated SCG**

*Type: draftCR For: Endorsement  
 38.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Endorsed.**

**R4-2208053 DraftCR to 36133 for interruptions due to RRM measurements on deactivated SCG**

*Type: draftCR For: Endorsement  
 36.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Revised to R4-2211074 (from R4-2208053).**

**R4-2211074 DraftCR to 36133 for interruptions due to RRM measurements on deactivated SCG**

*Type: draftCR For: Endorsement  
 36.133 v17.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Endorsed.**

**R4-2208287 Discussion on efficient activation/de-activation mechanism for one SCG**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Interruption requirements and measurement cycle value discussion

**Decision: Noted.**

**R4-2208585 Final aspects on Efficient activation/de-activation mechanism for one SCG**

*Type: discussion For: Agreement  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208586 CR on Efficient activation/de-activation mechanism for one SCG (section 8)**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2329 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2211075 (from R4-2208586).**

**R4-2211075 CR on Efficient activation/de-activation mechanism for one SCG (section 8)**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2329 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2208587 CR on Efficient activation/de-activation mechanism for one SCG (section 9)**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2330 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2211194 (from R4-2208587).**

**R4-2211194 CR on Efficient activation/de-activation mechanism for one SCG (section 9)**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2330 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2208645 CR to maintain SCG activation and deactivation delay requirements in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2334 rev Cat: F (Rel-17)  
  
 Source: OPPO*

**Decision: Revised to R4-2211076 (from R4-2208645).**

**R4-2211076 CR to maintain SCG activation and deactivation delay requirements in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2334 rev Cat: F (Rel-17)  
  
 Source: OPPO*

**Decision: Agreed.**

**R4-2208814 Remain issues on Efficient activation/de-activation mechanism for one SCG**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208969 Discussion on efficient activation/de-activation mechanism for one SCG**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

**R4-2208970 Correction on beam failure detection on deactived PSCell**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2348 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

**R4-2210179 Update to UE transmit requirement under deactivated SCG**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2401 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

The CR updates the UE transmit timing requirements for SCG when PSCell is deactivated

**Decision: Revised to R4-2211163 (from R4-2210179).**

**R4-2211163 Update to UE transmit requirement under deactivated SCG**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2401 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

The CR updates the UE transmit timing requirements for SCG when PSCell is deactivated

**Decision: Postponed.**

##### 9.21.1.3 Conditional PSCell change and addition

**R4-2208288 Discussion on conditional PScell change and addition**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

test case set up discussion

**Decision: Withdrawn.**

##### 9.21.1.4 Others

**R4-2208588 TCI state indication with direct SCell activation**

*Type: discussion For: Agreement  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208589 CR for TCI state indication with direct SCell activation**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2331 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2211195 (from R4-2208589).**

**R4-2211195 CR for TCI state indication with direct SCell activation**

*Type: CR For: Approval  
 38.133 v17.5.0 CR-2331 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2208971 Draft CR on interruptions at A-TRS based SCell activation/deactivation with multiple downlink Scells (38.133)**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2350 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211069 (from R4-2208971).**

**R4-2211069 Draft CR on interruptions at A-TRS based SCell activation/deactivation with multiple downlink Scells (38.133)**

*Type: CR For: Agreement  
 38.133 v17.5.0 CR-2350 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Not pursued.**

**R4-2208972 Draft CR on Interruptions at A-TRS based SCell activation/deactivation (36.133)**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7155 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Revised to R4-2211070 (from R4-2208972).**

**R4-2211070 Draft CR on Interruptions at A-TRS based SCell activation/deactivation (36.133)**

*Type: CR For: Agreement  
 36.133 v17.5.0 CR-7155 rev Cat: F (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision: Agreed.**

#### 9.21.2 RRM performance requirements

**R4-2208289 Disucssion on test case for SCG activation and Scell activation**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

To discuss the test scope of Rel-17 enhanmcnet for one SCG activaiton and Scell activation

**Decision: Noted.**

**R4-2208816 Discussion on RRM performance requirements for Multi-Radio Dual-Connectivity enhancements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208973 Discussion on test cases on R17 Further Multi-RAT Dual-Connectivity enhancements**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision: Noted.**

### 9.22 Enhanced IIoT and URLLC support

#### 9.22.1 RRM core requirement maintenance

##### 9.22.1.1 Propagation delay compensation enhancements

##### 9.22.1.2 Reference point for Te requirements

##### 9.22.1.3 Others

#### 9.22.2 RRM performance requirements

#### 9.22.3 Demodulation performance and CSI requirements

### 9.23 NR Sidelink Relay

#### 9.23.1 RRM core requirement maintenance

#### 9.23.2 RRM performance requirements

### 9.24 NR small data transmissions in INACTIVE state

#### 9.24.1 RRM core requirement maintenance

#### 9.24.2 RRM performance requirements

## 10 Rel-17 Work Items for LTE

### 10.1 LTE inter-band Carrier Aggregation for 2 bands DL with 1 band UL

**[103-e][126] LTE\_Baskets, AI 10.1, 10.2, 10.3, 10.4, 10.5 – Per Lindell**

**R4-2210261 Email discussion summary [103-e][126] LTE\_Baskets**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

#### 10.1.1 Rapporteur Input (WID/TR/CR)

**R4-2208667 Revised WID: Rel17 LTE inter-band CA for 2 bands DL with 1 band UL**

*Type: WID revised For: Endorsement  
 Source: Qualcomm Incorporated*

**Decision:** The document was **for email approval**.

**R4-2208668 TR 36.717-02-01 v0.8.0**

*Type: draft TR For: Agreement  
 36.717-02-01 v0.8.0 CR- rev Cat: (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision:** The document was **for email approval**.

**R4-2208669 Big CR to TS36.101: Rel-17 LTE inter-band CA for 2 bands DL and 1 band UL CA**

*Type: CR For: Agreement  
 36.101 v17.5.0 CR-5863 rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision:** The document was **for email approval**.

#### 10.1.2 UE RF with harmonic, close proximity and isolation issues

#### 10.1.3 UE RF without specific issues

**R4-2208444 Draft CR for 36.101 to introduce new configurations for LTE CA with 2 bands DL and 1 band UL**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Revised to R4-2210353 (from R4-2208444).**

**R4-2210353 Draft CR for 36.101 to introduce new configurations for LTE CA with 2 bands DL and 1 band UL**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Endorsed.**

**R4-2209017 Draft CR for 36.101 to add CA\_1A-1A-38A\_BCS0**

*Type: CR For: Agreement  
 36.101 v17.5.0 CR-5864 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

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

**R4-2209254 Draft CR for 36.101 to add CA\_1A-1A-38A\_BCS0**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

### 10.2 LTE inter-band Carrier Aggregation for 3 bands DL with 1 band UL

#### 10.2.1 Rapporteur Input (WID/TR/CR)

**R4-2208648 Big CR on Introduction of completed R17 3DL 1 UL CA band combinations to TS 36.101**

*Type: CR For: Agreement  
 36.101 v17.5.0 CR-5862 rev Cat: B (Rel-17)  
  
 Source: Huawei Technologies France*

**Decision:** The document was **for email approval**.

**R4-2208737 revised WID Rel-17 LTE inter-band CA for 3 bands DL with 1 band UL**

*Type: WID revised For: Approval  
 Source: Huawei Technologies France*

**Decision:** The document was **for email approval**.

**R4-2208758 TR 36.717-03-01 LTE inter-band Carrier Aggregation for 3 bands DL with 1 band UL**

*Type: draft TR For: Approval  
 36.717-03-01 v0.7.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei Technologies France*

**Decision:** The document was **for email approval**.

**R4-2209168 Draft CR for 36.101 to add CA\_1A-3A-3A-7A-38A\_BCS0 CA\_1A-1A-3A-7A-38A\_BCS0 and CA\_1A-1A-3C-7A-38A\_BCS0**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209169 Draft CR for 36.101 to add the band combination CA\_3A-3A-7A-38A**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

#### 10.2.2 UE RF with harmonic, close proximity and isolation issues

#### 10.2.3 UE RF without specific issues

**R4-2208446 Draft CR for 36.101 to introduce new configurations for LTE CA with 3 bands DL and 1 band UL**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Endorsed.**

**R4-2208637 Reply LS on FR2 RF requirements applicability under ETC**

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

**Decision: Noted.**

**R4-2209018 Draft CR for 36.101 to add CA\_1A-1A-3A-38A\_BCS0 and CA\_1A-1A-3C-38A\_BCS0**

*Type: CR For: Agreement  
 36.101 v17.5.0 CR-5865 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

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

**R4-2209019 Draft CR for 36.101 to add CA\_1A-1A-7A-38A\_BCS0**

*Type: CR For: Agreement  
 36.101 v17.5.0 CR-5866 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

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

**R4-2209255 Draft CR for 36.101 to add CA\_1A-1A-3A-38A\_BCS0 and CA\_1A-1A-3C-38A\_BCS0**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2209256 Draft CR for 36.101 to add CA\_1A-1A-7A-38A\_BCS0**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

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

#### 10.3.1 Rapporteur Input (WID/TR/CR)

**R4-2209534 Revised WID: LTE Advanced inter-band CA Rel-17 for x bands DL (x=4, 5, 6) with 1 band UL**

*Type: WID revised For: Endorsement  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **for email approval**.

**R4-2209535 TR 36.717-04-01 v0.9.0**

*Type: draft TR For: Agreement  
 36.717-04-01 v0.9.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **for email approval**.

**R4-2209536 Updated scope of TR: LTE inter-band CA for 4/5/6 bands DL with 1 band UL**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2210354 (from R4-2209536).**

**R4-2210354 Updated scope of TR: LTE inter-band CA for 4/5/6 bands DL with 1 band UL**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Approved.**

**R4-2209785 Big CR to TS 36.101: LTE Advanced inter-band CA Rel-17 for x bands DL (x=4, 5, 6) with 1 band UL**

*Type: CR For: Approval  
 36.101 v17.5.0 CR-5870 rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **for email approval**.

#### 10.3.2 UE RF with 4 LTE bands CA

#### 10.3.3 UE RF with 5 LTE bands CA

**R4-2208447 Draft CR for 36.101 to introduce new configurations for LTE CA with X bands DL and 1 band UL**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Endorsed.**

### 10.4 LTE inter-band Carrier Aggregation for 2 bands DL with 2 band UL

#### 10.4.1 Rapporteur Input (WID/TR/CR)

**R4-2209173 Big CR for TS 36.101: Introduction of completed LTE CA for 2 bands DL with 2 bands UL (Rel-17)**

*Type: CR For: Agreement  
 36.101 v17.5.0 CR-5868 rev Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **for email approval**.

**R4-2209174 Revised WID for LTE inter-band CA for 2 bands DL with 2 bands UL**

*Type: WID revised For: Endorsement  
 Source: Huawei, HiSilicon*

**Decision:** The document was **for email approval**.

**R4-2209250 TR 36.717-02-02 v0.5.0**

*Type: draft TR For: Agreement  
 36.717-02-02 v0.5.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

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

**R4-2209814 TR 36.717-02-02 v0.6.0**

*Type: draft TR For: Agreement  
 36.717-02-02 v0.6.0 CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **for email approval**.

#### 10.4.2 UE RF with harmonic, close proximity and isolation issues

#### 10.4.3 UE RF without specific issues

**R4-2208445 Draft CR for 36.101 to introduce new configurations for LTE CA with 2 bands DL and 2 bands UL**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Endorsed.**

**R4-2208449 TP for TR 36.717-02-02 CA\_1-40**

*Type: pCR For: Approval  
 36.717-02-02 v0.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Revised to R4-2210355 (from R4-2208449).**

**R4-2210355 TP for TR 36.717-02-02 CA\_1-40**

*Type: pCR For: Approval  
 36.717-02-02 v0.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Approved.**

**R4-2208450 TP for TR 36.717-02-02 CA\_28-40**

*Type: pCR For: Approval  
 36.717-02-02 v0.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Revised to R4-2210356 (from R4-2208450).**

**R4-2210356 TP for TR 36.717-02-02 CA\_28-40**

*Type: pCR For: Approval  
 36.717-02-02 v0.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Approved.**

**R4-2210064 draft CR 36101 to add CA\_3C-26A**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, Telstra*

**Abstract:**

draft CR 36101 to add CA\_3C-26A

**Decision: Endorsed.**

**R4-2210065 draft CR 36101 to add CA\_7C-26A**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, Telstra*

**Abstract:**

draft CR 36101 to add CA\_7C-26A

**Decision: Endorsed.**

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

#### 10.5.1 Rapporteur Input (WID/TR/CR)

**R4-2207642 TR 36.717-03-02 v0.7.0 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 v0.7.0 CR- rev Cat: (Rel-17)  
  
 Source: LG Electronics UK*

**Abstract:**

TR 0.7.0 to complete LTE-A inter-band CA for x bands (x-3,4,5) DL with 2 bands UL WI in Rel-17

**Decision:** The document was **for email approval**.

**R4-2207643 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: Endorsement  
 Source: LG Electronics UK*

**Abstract:**

Revised WID on LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL in Rel-17

**Decision:** The document was **for email approval**.

**R4-2207644 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 v17.5.0 CR-5859 rev Cat: B (Rel-17)  
  
 Source: LG Electronics UK*

**Abstract:**

Introduction of LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL to TS36.101

**Decision:** The document was **for email approval**.

#### 10.5.2 UE RF with MSD

#### 10.5.3 UE RF without MSD

**R4-2208448 Draft CR for 36.101 to introduce new configurations for LTE CA with X bands DL and 2 bands UL**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Samsung, Spark*

**Decision: Endorsed.**

**R4-2210060 draft CR 36101 to add CA\_1A-3A-7C-26A, CA\_1A-3C-7A-26A, CA\_1A-3C-7C-26A**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, Telstra*

**Abstract:**

draft CR 36101 to add CA\_1A-3A-7C-26A, CA\_1A-3C-7A-26A, CA\_1A-3C-7C-26A

**Decision: Endorsed.**

**R4-2210061 draft CR 36101 to add CA\_1A-3C-26A**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, Telstra*

**Abstract:**

draft CR 36101 to add CA\_1A-3C-26A

**Decision: Endorsed.**

**R4-2210062 draft CR 36101 to add CA\_1A-7C-26A**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, Telstra*

**Abstract:**

draft CR 36101 to add CA\_1A-7C-26A

**Decision: Endorsed.**

**R4-2210063 draft CR 36101 to add CA\_3A-7C-26A, CA\_3C-7A-26A, CA\_3C-7C-26A**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, Telstra*

**Abstract:**

draft CR 36101 to add CA\_3A-7C-26A, CA\_3C-7A-26A, CA\_3C-7C-26A

**Decision: Endorsed.**

### 10.6 RRM for LTE CA basket WIs

#### 10.6.1 RRM Core (36.133)

#### 10.6.2 RRM Perf (36.133)

### 10.7 New WID on Additional LTE bands for UE category M1&M2 and/or NB1&NB2 in Rel-17

#### 10.7.1 Rapporteur Input (WID/TR/CR)

**R4-2209486 new WID Additional LTE bands for UE category M1\_M2 \_NB1\_NB2 in Rel-18**

*Type: WID new For: Endorsement  
 Source: Ericsson*

**Abstract:**

new WID to adding bands for M1/M2/NB1/NB2 in Rel-18

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

#### 10.7.2 RF requirements

**R4-2209468 CR on adding B48 for M1/M2/NB1/NB2**

*Type: draftCR For: Endorsement  
 36.101 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M1/M2/NB1/NB2

**Decision: Agreed.**

**R4-2209469 CR on adding B48 for M1/M2/NB1/NB2**

*Type: draftCR For: Endorsement  
 36.104 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M1/M2/NB1/NB2

**Decision: Agreed.**

**R4-2209470 CR on adding B48 for M1/M2/NB1/NB2**

*Type: draftCR For: Endorsement  
 36.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M1/M2/NB1/NB2

**Decision: Revised to R4-2210989 (from R4-2209470).**

**R4-2210989 CR on adding B48 for M1/M2/NB1/NB2**

*Type: draftCR For: Endorsement  
 36.133 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M1/M2/NB1/NB2

**Decision: Agreed.**

**R4-2209471 CR on adding B48 for M1/M2/NB1/NB2**

*Type: draftCR For: Endorsement  
 37.104 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M1/M2/NB1/NB2

**Decision: Agreed.**

**R4-2209474 CR on adding B48 for M1**

*Type: draftCR For: Endorsement  
 36.307 v13.14.0 CR- rev Cat: B (Rel-13)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M1 in release independent from Rel-13

**Decision: Agreed.**

**R4-2209475 CR on adding B48 for M1**

*Type: draftCR For: Endorsement  
 36.307 v14.11.0 CR- rev Cat: A (Rel-14)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M1 in release independent from Rel-13

**Decision: Withdrawn.**

**R4-2209476 CR on adding B48 for M1**

*Type: draftCR For: Endorsement  
 36.307 v15.8.0 CR- rev Cat: A (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M1 in release independent from Rel-13

**Decision: Withdrawn.**

**R4-2209477 CR on adding B48 for M1**

*Type: draftCR For: Endorsement  
 36.307 v16.4.0 CR- rev Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M1 in release independent from Rel-13

**Decision: Withdrawn.**

**R4-2209478 CR on adding B48 for M1**

*Type: draftCR For: Endorsement  
 36.307 v17.0.0 CR- rev Cat: A (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M1 in release independent from Rel-13

**Decision: Withdrawn.**

**R4-2209479 CR on adding B48 for M2**

*Type: draftCR For: Endorsement  
 36.307 v14.11.0 CR- rev Cat: B (Rel-14)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M2 in release independent from Rel-14

**Decision: Agreed.**

**R4-2209480 CR on adding B48 for M2**

*Type: draftCR For: Endorsement  
 36.307 v15.8.0 CR- rev Cat: A (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M2 in release independent from Rel-14

**Decision: Withdrawn.**

**R4-2209481 CR on adding B48 for M2**

*Type: draftCR For: Endorsement  
 36.307 v16.4.0 CR- rev Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M2 in release independent from Rel-14

**Decision: Withdrawn.**

**R4-2209482 CR on adding B48 for M2**

*Type: draftCR For: Endorsement  
 36.307 v17.0.0 CR- rev Cat: A (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for M2 in release independent from Rel-14

**Decision: Withdrawn.**

**R4-2209483 CR on adding B48 for NB1/NB2**

*Type: draftCR For: Endorsement  
 36.307 v15.8.0 CR- rev Cat: B (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for NB1/NB2 in release independent from Rel-15

**Decision: Agreed.**

**R4-2209484 CR on adding B48 for NB1/NB2**

*Type: draftCR For: Endorsement  
 36.307 v16.4.0 CR- rev Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for NB1/NB2 in release independent from Rel-15

**Decision: Withdrawn.**

**R4-2209485 CR on adding B48 for NB1/NB2**

*Type: draftCR For: Endorsement  
 36.307 v17.0.0 CR- rev Cat: A (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for NB1/NB2 in release independent from Rel-15

**Decision: Withdrawn.**

#### 10.7.3 Others

**R4-2209472 CR on adding B48 for NB1/NB2**

*Type: draftCR For: Endorsement  
 36.141 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for NB1/NB2

**Decision: Agreed.**

**R4-2209473 CR on adding B48 for NB1/NB2**

*Type: draftCR For: Endorsement  
 37.141 v17.5.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR provides the B48 update for NB1/NB2

**Decision: Agreed.**

### 10.8 Additional enhancements for NB-IoT and LTE-MTC

**R4-2208677 Discussion and reply LS on UE capability for 16QAM for NB-IoT**

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

**Decision: Noted.**

**R4-2209487 LS response on UE capability for 16QAM for NB-IoT**

*Type: LS out For: Approval  
 to RAN1  
 Source: Ericsson*

**Abstract:**

Reply for RAN1 LS

**Decision: Noted.**

**R4-2209714 Discussion on UE capability for 16QAM for NB-IoT**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on BS demodulation requirements for NB-IoT 16QAM

**Decision: Noted.**

#### 10.8.1 UE RF requirement maintenance

#### 10.8.2 BS RF requirement maintenance

#### 10.8.3 BS conformance testing

#### 10.8.4 RRM core requirements maintenance

#### 10.8.5 RRM performance requirements

#### 10.8.6 Demodulation requirements

##### 10.8.6.1 General

##### 10.8.6.2 Demodulation requirements for NB-IoT

###### 10.8.6.2.1 UE demodulation requirements

###### 10.8.6.2.2 BS demodulation requirements

##### 10.8.6.3 Demodulation requirements for MTC

## 11 Rel-18 Study Items for NR

### 11.1 Study on enhanced test methods for FR2 in NR

#### 11.1.1 Maintenance on objectives 1~6

#### 11.1.2 OTA test methods for UE RF, RRM and demodulation for 52.6~71GHz

##### 11.1.2.1 General

###### 11.1.2.1.1 Test system assumption

###### 11.1.2.1.2 UE types

###### 11.1.2.1.3 MU assessment

###### 11.1.2.1.4 Others

##### 11.1.2.2 Test methodology for UE RF

##### 11.1.2.3 Test methodology for RRM

##### 11.1.2.4 Test methodology for UE demodulation and CSI

### 11.2 Study on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths

**[103-e][134] FS\_NR\_eff\_BW\_util, AI 11.2 – Esther Sienkiewicz**

**R4-2210269 Email discussion summary for [103-e][134] FS\_NR\_eff\_BW\_util**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210466 (from R4-2210269).**

**R4-2210466 Email discussion summary for [103-e][134] FS\_NR\_eff\_BW\_util**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210579 | WF on carrierBandwidth in SIB1 | Moderator (Ericsson) | Sub-topic #2-1  Observation 3/4: Different understandings whether the carrierBandwidth in SIB1 must correspond to the maximum transmission bandwidth. The different view points should be captured in WF. |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2209136 |  | draft TR 38844 v0.0.8 | Ericsson | Agreed |  |
| R4-2208041 | R4-2210796 | TP to TR 38.844: General Updates | Intel Corporation | Revised | Based upon first round comments. |
| R4-2208554 | R4-2210797 | TP for wider channel bandwidth | Huawei, HiSilicon | Revised | Based upon first round comments. |
| R4-2210343 | R4-2210798 | Further input on performance when using the next larger channel | Apple | Revised | Based upon first round comments. |
| R4-2208656 | R4-2210799 | Signalling and configuration aspects of using larger channel bandwidth | Nokia, Nokia Shanghai Bell | Revised | Based upon first round comments. |
| R4-2208657 | R4-2210800 | TP to TR 38.844: Legacy UE and RAN4 standard impact to Larger Channel BW than licensed BW | Nokia, Nokia Shanghai Bell | Revised | Based upon first round comments. |
| R4-2208755 | R4-2210801 | TP for 38.844: configuration for the case of larger channel bandwidths than licensed bandwidth | Ericsson | Revised | Based upon first round comments.  Consensus on observation 6 should be reflected and captured in TP. Part of Proposal 2 in R4-2208656 (Nokia) is then agreeable. Revision of R4-2208755 (Ericsson) should reflect this. |
| R4-2209031 | R4-2210802 | Further discussion on the Wider CBW approach | ZTE | Revised | Based upon first round comments. |
| R4-2208756 | R4-2210803 | TP for 38.844: configuration for the case of larger channel bandwidths than licensed bandwidth for TDD operation | Ericsson | Revised | Based upon first round comments. |
| R4-2208555 | R4-2210804 | TP for Overlapping UE CBWs from Network Perspective | Huawei, HiSilicon | Revised | Based upon first round comments. |
| R4-2209540 | R4-2210805 | TP to TR 38.844: On RAN1 and RAN2 impact for combined UE CBW (one cell) | Nokia, Nokia Shanghai Bell | Revised | Based upon first round comments. |
| R4-2208881 | R4-2210806 | TP for 38.844: corrections including the case of combined UE CBW (one cell) | Ericsson | Revised | Based upon first round comments. |
| R4-2209541 | R4-2210807 | TP to TR 38.844: On UE receiver selectivity requirements for combined UE CBW (one cell) | Nokia, Nokia Shanghai Bell | Revised | Based upon first round comments. |
| R4-2208556 | R4-2210808 | TP for overlapping CA | Huawei, HiSilicon | Revised | Based upon first round comments. |
| R4-2209032 | R4-2210809 | Further discussion on the overlapping CA approach | ZTE | Revised | Based upon first round comments. |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210579 |  | WF on carrierBandwidth in SIB1 | Moderator (Ericsson) | Noted |  |
| R4-2209136 |  | draft TR 38844 v0.0.8 | Ericsson | Agreed |  |
| R4-2210796 |  | TP to TR 38.844: General Updates | Intel Corporation | Approved |  |
| R4-2210797 |  | TP for wider channel bandwidth | Huawei, HiSilicon | Approved |  |
| R4-2210798 |  | Further input on performance when using the next larger channel | Apple | Approved |  |
| R4-2210799 |  | Signalling and configuration aspects of using larger channel bandwidth | Nokia, Nokia Shanghai Bell | Noted |  |
| R4-2210800 |  | TP to TR 38.844: Legacy UE and RAN4 standard impact to Larger Channel BW than licensed BW | Nokia, Nokia Shanghai Bell | Noted |  |
| R4-2210801 |  | TP for 38.844: configuration for the case of larger channel bandwidths than licensed bandwidth | Ericsson | Noted |  |
| R4-2210802 |  | Further discussion on the Wider CBW approach | ZTE | Approved |  |
| R4-2210803 |  | TP for 38.844: configuration for the case of larger channel bandwidths than licensed bandwidth for TDD operation | Ericsson | Noted |  |
| R4-2210804 |  | TP for Overlapping UE CBWs from Network Perspective | Huawei, HiSilicon | Approved |  |
| R4-2210805 |  | TP to TR 38.844: On RAN1 and RAN2 impact for combined UE CBW (one cell) | Nokia, Nokia Shanghai Bell | Noted |  |
| R4-2210806 |  | TP for 38.844: corrections including the case of combined UE CBW (one cell) | Ericsson | Noted |  |
| R4-2210807 |  | TP to TR 38.844: On UE receiver selectivity requirements for combined UE CBW (one cell) | Nokia, Nokia Shanghai Bell | Withdrawn |  |
| R4-2210808 |  | TP for overlapping CA | Huawei, HiSilicon | Approved |  |
| R4-2210809 |  | Further discussion on the overlapping CA approach | ZTE | Noted |  |

**R4-2210579 WF on carrierBandwidth in SIB1**

*Type: other For: Approval  
 Source: Moderator (Ericsson)*

**Decision: Noted.**

**GTW on May 16**

**On the draft WF on carrierBandwidth in SIB1**

**Way Forward**

The following are agreed:

* carrierBandwidth in SIB1 has no restrictions
  + less than 275 PRB
* servingCellConfig is used to determine channel bandwidth (MHz) and location determination
  + Location is determined with existing Rel-15 RRC specification

**Discussion: (part of the minutes of this big debate)**

ZTE: for the first main bullet, does it mean it can be set to any values in terms of RPB. If that is the case it is not aligned with the spec.

Qualcomm: same question. RAN2 clearly say the bandwidth advertised by network should have the values specified in RAn1.

Apple: same as Qualcomm.

Ericsson: where exactly is the grid size of resource restricted to channel bandwidth in the specification? The carrier bandwidth can take any bandwidth. That is how UE locates its bandwidth. Bandwidth part in SIB 1 can take any value.

Huawei: We share the similar view as Ericsson. There is no restriction. We actually define the requirements based on channel bandwidth. The dedicated channel bandwidth should be the bandwidth defined in RAN4 spec. We try to avoid the case that we define CBW but it cannot be used.

Qualcomm: Network can configure the channel bandwidth that corresponds the bandwidth to 38.101-x and 38.104. There is some discussion brought up by CMCC in maintenance email thread.

Nokia: our understanding is the same as Ericsson and Huawei. We should not restrict SIB1 to be the same as RAN4 defined NRB.

CMCC: for carrier bandwidth in SIB1, there is no restriction in RAN2. It can be any number of RB. Our proposal is for the dedicated channel bandwidth.

Ericsson: The carrier resource grid size advertised in SIB 1 should not be confused with UE dedicated bandwidth.

ZTE: we can confirm it to RAN2 to confirm SIB1 spec. There should be restriction.

Qualcomm: it should be sub-set of RAN4 defined rather any arbitrual value.

Ericsson: it is correct that UE uses the common information for configuration.

Apple: There is not requirement for network to generate the dedicated channel bandwidth for UE. We do have to ensure the common bandwidth should be set of RAN4 specified channel bandwidth.

Ericsson: In certain deployment, you have to configure this field to let UE know where to locate the channel bandwidth.

CMCC: there is exact IE for carrierbandwidth. If we are talking about the carrierBandwidth in SIB1, there is no restriction.

T-Mobile: In RAN4 spec, any RB can be configured. ChannelBandwidth in SIB1 is more relevant.

**Chair =>**: Based on the discussion, the issues listed in the draft of way forward R4-2210579 seem beyond the scope of this SI and realted to the exsiting specification and companies had different understanding. But they are thought of fundamental to address the other issues for this SI. To move forward, Chair suggested to put SI on hold and focus on those issues first. Whether to put SI on hold and how to organize the discussion for those fundamental issues need be discussed in the upcoming RAN plenary. In this RAN4 meeting, the TPs related to those issues can be noted, while the other TPs not related to the issues can be further discussed in the second round and approved if agreeable.

#### 11.2.1 General and TR

**R4-2208037 TP to TR 38.844: General Updates**

*Type: pCR For: Approval  
 38.844 v0.8.0 CR- rev Cat: (Rel-18)  
  
 Source: Intel Corporation*

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

**R4-2208040 TP for TR 38.868: Conclusions**

*Type: pCR For: Approval  
 38.844 v0.8.0 CR- rev Cat: (Rel-18)  
  
 Source: Intel Corporation*

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

**R4-2208041 TP to TR 38.844: General Updates**

*Type: pCR For: Approval  
 38.844 v0.8.0 CR- rev Cat: (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Revised to R4-2210796 (from R4-2208041).**

**R4-2210796 TP to TR 38.844: General Updates**

*Type: pCR For: Approval  
 38.844 v0.8.0 CR- rev Cat: (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Approved.**

**R4-2208044 TP for TR 38.868: Conclusions**

*Type: pCR For: Approval  
 38.844 v0.8.0 CR- rev Cat: (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2209136 draft TR 38844 v0.0.8**

*Type: draft TR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

implementation of agreed TPs from RAN4 #102-e

**Decision: Agreed.**

#### 11.2.2 Evaluation of use of larger channel bandwidths than licensed bandwidth

**R4-2208554 TP for wider channel bandwidth**

*Type: pCR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210797 (from R4-2208554).**

**R4-2210797 TP for wider channel bandwidth**

*Type: pCR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

##### 11.2.2.1 Channel filter assumptions and RB blanking with impacts on UE (ACS, blocking)

**R4-2209319 Further input on performance when using the next larger channel**

*Type: pCR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Apple*

**Decision: Revised to R4-2210343 (from R4-2209319).**

**R4-2210343 Further input on performance when using the next larger channel**

*Type: pCR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Apple*

**Decision: Revised to R4-2210798 (from R4-2210343).**

**R4-2210798 Further input on performance when using the next larger channel**

*Type: pCR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Apple*

**Decision: Approved.**

##### 11.2.2.2 Signaling and configuration (RAN1/RAN2 impacts) aspects

**R4-2207707 Considerations for wider CBW solutions on Signaling and configuration aspects**

*Type: discussion For: Discussion  
 Source: China Telecom Corporation Ltd.*

**Decision: Noted.**

**R4-2208656 Signalling and configuration aspects of using larger channel bandwidth**

*Type: other For: Approval  
 38.844 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2210799 (from R4-2208656).**

**R4-2210799 Signalling and configuration aspects of using larger channel bandwidth**

*Type: other For: Approval  
 38.844 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208755 TP for 38.844: configuration for the case of larger channel bandwidths than licensed bandwidth**

*Type: pCR For: Approval  
 38.844 v0.0.7 CR- rev Cat: (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this text proposal we provide a substantial update of the endorsed TP in R4-2204622 without changing the concept

**Decision: Revised to R4-2210801 (from R4-2208755).**

**R4-2210801 TP for 38.844: configuration for the case of larger channel bandwidths than licensed bandwidth**

*Type: pCR For: Approval  
 38.844 v0.0.7 CR- rev Cat: (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this text proposal we provide a substantial update of the endorsed TP in R4-2204622 without changing the concept

**Decision: Noted.**

##### 11.2.2.3 Other aspects such as detailed solution, complexity, legacy UE, etc

**R4-2208657 TP to TR 38.844: Legacy UE and RAN4 standard impact to Larger Channel BW than licensed BW**

*Type: pCR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2210800 (from R4-2208657).**

**R4-2210800 TP to TR 38.844: Legacy UE and RAN4 standard impact to Larger Channel BW than licensed BW**

*Type: pCR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2208756 TP for 38.844: configuration for the case of larger channel bandwidths than licensed bandwidth for TDD operation**

*Type: pCR For: Approval  
 38.844 v0.0.7 CR- rev Cat: (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this text proposal we describe the larger-bandwidth case for TDD

**Decision: Revised to R4-2210803 (from R4-2208756).**

**R4-2210803 TP for 38.844: configuration for the case of larger channel bandwidths than licensed bandwidth for TDD operation**

*Type: pCR For: Approval  
 38.844 v0.0.7 CR- rev Cat: (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this text proposal we describe the larger-bandwidth case for TDD

**Decision: Noted.**

**R4-2209031 Further discussion on the Wider CBW approach**

*Type: discussion For: Agreement  
 Source: ZTE Wistron Telecom AB*

**Decision: Revised to R4-2210802 (from R4-2209031).**

**R4-2210802 Further discussion on the Wider CBW approach**

*Type: discussion For: Agreement  
 Source: ZTE Wistron Telecom AB*

**Decision: Approved.**

#### 11.2.3 Evaluation of use of overlapping UE channel bandwidths

##### 11.2.3.1 Overlapping CBWs from network perspective

**R4-2208555 TP for Overlapping UE CBWs from Network Perspective**

*Type: pCR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210804 (from R4-2208555).**

**R4-2210804 TP for Overlapping UE CBWs from Network Perspective**

*Type: pCR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

###### 11.2.3.1.1 Signaling and configuration (RAN1/RAN2 impacts) aspects

###### 11.2.3.1.2 Other aspects such as detailed solution, complexity, legacy UE, etc

##### 11.2.3.2 Combined UE CBWs (one cell)

###### 11.2.3.2.1 Signaling and configuration (RAN1/RAN2 impacts) aspects

**R4-2208881 TP for 38.844: corrections including the case of combined UE CBW (one cell)**

*Type: pCR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Ericsson Limited*

**Abstract:**

This TP introduces couple of corrections to TR38.844 related to UE carrier bandwidth modification.

**Decision: Revised to R4-2210806 (from R4-2208881).**

**R4-2210806 TP for 38.844: corrections including the case of combined UE CBW (one cell)**

*Type: pCR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Ericsson Limited*

**Abstract:**

This TP introduces couple of corrections to TR38.844 related to UE carrier bandwidth modification.

**Decision: Noted.**

**R4-2209540 TP to TR 38.844: On RAN1 and RAN2 impact for combined UE CBW (one cell)**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2210805 (from R4-2209540).**

**R4-2210805 TP to TR 38.844: On RAN1 and RAN2 impact for combined UE CBW (one cell)**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

###### 11.2.3.2.2 Other aspects such as detailed solution, complexity, legacy UE, etc

**R4-2209541 TP to TR 38.844: On UE receiver selectivity requirements for combined UE CBW (one cell)**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2210807 (from R4-2209541).**

**R4-2210807 TP to TR 38.844: On UE receiver selectivity requirements for combined UE CBW (one cell)**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

##### 11.2.3.3 Overlapping CA (two cells)

**R4-2208556 TP for overlapping CA**

*Type: pCR For: Approval  
 38.844 v0.0.7 CR- rev Cat: (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210808 (from R4-2208556).**

**R4-2210808 TP for overlapping CA**

*Type: pCR For: Approval  
 38.844 v0.0.7 CR- rev Cat: (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

**R4-2209032 Further discussion on the overlapping CA approach**

*Type: discussion For: Agreement  
 Source: ZTE Wistron Telecom AB*

**Decision: Revised to R4-2210809 (from R4-2209032).**

**R4-2210809 Further discussion on the overlapping CA approach**

*Type: discussion For: Agreement  
 Source: ZTE Wistron Telecom AB*

**Decision: Noted.**

###### 11.2.3.3.1 Signaling and configuration (RAN1/RAN2 impacts) aspects

###### 11.2.3.3.2 Other aspects such as detailed solution, complexity, legacy UE, etc

##### 11.2.3.4 Overall method comparisons

**R4-2208038 TP to TR 38.844: Method comparisons**

*Type: pCR For: Approval  
 38.844 v0.8.0 CR- rev Cat: (Rel-18)  
  
 Source: Intel Corporation*

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

**R4-2208042 TP to TR 38.844: Method comparisons**

*Type: pCR For: Approval  
 38.844 v0.8.0 CR- rev Cat: (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2208557 TP for overall method comparisons**

*Type: other For: Approval  
 38.844 v CR- rev Cat: (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2208658 TP to TR 38.844: Update to summary of wider CBW method**

*Type: pCR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2209137 TP to TR 38.844: Section 7 Comparison between different schemes**

*Type: pCR For: Approval  
 38.844 v0.0.8 CR- rev Cat: (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this contribution, the following text proposal to update the Clause 7 and to add completeness. Although [2][3] was not ultimately agreed, the TP does capture some points made during revisions in RAN4#102-e

**Decision: Noted.**

## 12 Rel-18 Work Items for LTE

### 12.1 Introduction of LTE TDD band in 1670-1675 MHz

**[103-e][127] R18\_LTE\_TDD\_1.6Hz, AI 12.1 – Ojas Choksi**

**R4-2210262 Email discussion summary for [103-e][127] R18\_LTE\_TDD\_1.6Hz**

*Type: other For: Information  
 Source: Moderator (Ligado)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210459 (from R4-2210262).**

**R4-2210459 Email discussion summary for [103-e][127] R18\_LTE\_TDD\_1.6Hz**

*Type: other For: Information  
 Source: Moderator (Ligado)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210572 | WF on Introduction of LTE TDD band in 1670 – 1675 MHz | Ligado Networks | To capture agreements from Round 1 and 2 for various sub-topics |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2207965 |  | Work Plan for Introduction of new LTE TDD band in 1670 – 1675 MHz | Ligado Networks | Approved | Agreement on the proposed WP |
| R4-2209539 |  | BS requirements for LTE TDD band in 1670 – 1675 MHz | Nokia, Nokia Shanghai Bell | Approved | Agreement on the expected changes to the BS spec, use of manufacturer declared limits for ASE and use of 105 as the number for the new band |
| R4-2209110 |  | N24 emission to 1670 – 1671 MHz | Nokia | Noted | Agreement to review filter data before determining the coexistence level  Agreement to be captured in the WF document |
| R4-2207966 |  | Emission Requirements for LTE TDD band in 1670 – 1675 MHz | Ligado Networks | Noted | Agreement related to new NS, specification of ASE in terms of conducted power and iii) coexistence limit for n24 based on n24 filter data.  Further discussion in Round 2 on MBW value(s) for measurement based evaluation of emission requirements.  Agreements to be captured in the WF document |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210572 |  | WF on Introduction of LTE TDD band in 1670 – 1675 MHz | Ligado Networks | Approved |  |

**R4-2210572 WF on Introduction of LTE TDD band in 1670 – 1675 MHz**

*Type: other For: Approval  
 Source: Ligado Networks*

**Decision: Approved.**

#### 12.1.1 General

**R4-2207965 Work plan for Introduction of LTE TDD band in 1670 – 1675 MHz**

*Type: Work Plan For: Approval  
 Source: Ligado Networks*

**Decision: Approved.**

**R4-2207966 Emission Requirements for LTE TDD band in 1670 – 1675 MHz**

*Type: discussion For: Approval  
 Source: Ligado Networks*

**Decision: Noted.**

#### 12.1.2 UE RF requirements

**R4-2209110 n24 emission to 1670 - 1671 MHz**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Noted.**

#### 12.1.3 BS RF requirements

**R4-2209539 BS requirements for LTE TDD band in 1670-1675 MHz**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Approved.**

## 13 Liaison and output to other groups

**[103-e][135] R17\_Maintenance, AI 13, 5.3.5.2 – Steven Chen**

**R4-2210270 Email discussion summary for [103-e][135] NR\_reply\_LS\_UE\_RF\_Canadan77**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210467 (from R4-2210270).**

**R4-2210467 Email discussion summary for [103-e][135] NR\_reply\_LS\_UE\_RF\_Canadan77**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 1st round**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
| R4-2210580 | WF on FR2 requirement applicability over ETC | Qualcomm |  |
| R4-2211125 | Reply LS on FR2 requirement applicability over ETC | OPPO | To: RAN5 |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2209631 | R4-2210810 | Draft Reply LS on lower humidity limit in normal temperature test environment | ZTE | Revised |  |
| R4-2208487  R4-2208766 |  |  |  | Noted |  |
| R4-2208488/ R4-2208489/ R4-2208490  R4-2208491/ R4-2208492/ R4-2208493 |  |  |  | Return to |  |
| R4-2209091  R4-2209368 |  |  |  | Noted |  |
| R4-2210211 | R4-2211129 | Reply LS on Additional RF requirements for NS\_03U, NS\_05U and NS\_43U | Qualcomm | Revised | To RAN5 |
| R4-2209369 |  |  |  | Not pursued |  |
| R4-2210208 | R4-2210811 | Applicability of requirements for NS\_xxU | Qualcomm | Revised |  |
| R4-2207681 | R4-2210812 | Reply to RAN5 LS on SCell Dropping in FR2 RF UL-CA tests | Apple | Revised |  |
| R4-2207656  R4-2208603  R4-2208757  R4-2208767  R4-2209419 |  |  |  | Noted |  |
| R4-2209259 | R4-2210813 | R15 Reply LS on FR2 ETC | OPPO | Revised |  |
| R4-2207639  R4-2208765  R4-2208637 |  |  |  | Noted |  |
| R4-2208634 |  |  |  | Not pursued |  |
| R4-2208764 | R4-2210814 | Reply LS on FR2 UE relative power control tolerance requirements | Huawei | Revised |  |
| R4-2207640 |  |  |  | Noted |  |
| R4-2210207 | R4-2210815 | Further Reply LS on configuration of p-MaxEUTRA and p-NR-FR1 | Qualcomm | Revised |  |
| R4-2210204 | R4-2211179 |  |  | Revised |  |
| R4-2209271 |  |  |  | Merged  with R4-2210204 |  |
| R4-2208747 | R4-2210816 | Extension of operation in the n77 frequency range in Canada | Ericsson | Revised |  |
| R4-2208867 |  |  |  | Noted |  |
| R4-2209108  R4-2209638 |  |  |  | Not pursued |  |

**Conclusions after 2nd round**

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Status** | **Comments** |
| R4-2210580 |  | WF on FR2 requirement applicability over ETC | Qualcomm | Withdrawn |  |
| R4-2211125 |  | Reply LS on FR2 requirement applicability over ETC | OPPO | Withdrawn | To: RAN5 |
| R4-2210810 |  | Draft Reply LS on lower humidity limit in normal temperature test environment | ZTE | Noted |  |
| R4-2208488/ R4-2208489/ R4-2208490  R4-2208491/ R4-2208492/ R4-2208493 |  |  |  | Not pursued |  |
| R4-2211129 |  | Reply LS on Additional RF requirements for NS\_03U, NS\_05U and NS\_43U | Qualcomm | Approved | To RAN5 |
| R4-2210811 |  | Applicability of requirements for NS\_xxU | Qualcomm | Endorsed |  |
| R4-2210812 |  | Reply to RAN5 LS on SCell Dropping in FR2 RF UL-CA tests | Apple | Approved | Tdoc is uploaded and no futher comment received |
| R4-2210813 |  | R15 Reply LS on FR2 ETC | OPPO | Noted |  |
| R4-2210814 |  | Reply LS on FR2 UE relative power control tolerance requirements | Huawei | Approved |  |
| R4-2210815 |  | Further Reply LS on configuration of p-MaxEUTRA and p-NR-FR1 | Qualcomm | Approved |  |
| R4-2211179 |  | Configured maximum power in the absence of p-maxEUTRA and p-NR-FR1 | Qualcomm | Endorsed |  |
| R4-2210816 |  | Extension of operation in the n77 frequency range in Canada | Ericsson | Postponed |  |

**R4-2210580 WF on FR2 requirement applicability over ETC**

*Type: other For: Approval  
 Source: Qualcomm*

**Decision: Withdrawn.**

**R4-2211125 Reply LS on FR2 requirement applicability over ETC**

*Type: LSout For: Approval  
 Source: OPPO*

**Decision: Withdrawn.**

### 13.1 R17 related

#### 13.1.1 Coordination of R17 gap features (R2-2203879)

#### 13.1.2 Others

### 13.2 R15, R16 related

#### 13.2.1 BWP operation without bandwidth restriction (R2-2204009)

#### 13.2.2 FR2 power control for NR-DC

#### 13.2.3 FR2 requirement applicability over ETC

**R4-2207639 On reply to RAN5 on FR2 requirement applicability over ETC**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

draft LS

**Decision: Noted.**

**R4-2208765 Draft reply LS on FR2 Extreme temperature conditions clarifications**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2209259 R15 Reply LS on FR2 ETC**

*Type: discussion For: Approval  
 Source: OPPO*

**Decision: Revised to R4-2210813 (from R4-2209259).**

**R4-2210813 R15 Reply LS on FR2 ETC**

*Type: discussion For: Approval  
 Source: OPPO*

**Decision: Noted.**

#### 13.2.4 FR2 UE relative power control tolerance requirements

**R4-2207640 On RAN5 request for change to FR2 UE relative power control tolerance requirements**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

We propose a technical evaluation to accommodate RAN5 request.

**Decision: Noted.**

**R4-2208764 Draft reply LS on FR2 UE relative power control tolerance requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2210814 (from R4-2208764).**

**R4-2210814 Draft reply LS on FR2 UE relative power control tolerance requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

#### 13.2.5 Lower humidity limit in normal temperature test environment (R5-221604)

**R4-2208487 Handling of humidity inconsistency among specifications**

*Type: discussion For: Approval  
 Source: Samsung*

**Decision: Noted.**

**R4-2208488 Draft CR to TS 38.101-1 on humidity condition for normal temperature**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Samsung*

**Decision: Not pursued.**

**R4-2208489 Draft CR to TS 38.101-1 on humidity condition for normal temperature**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Samsung*

**Decision: Withdrawn.**

**R4-2208490 Draft CR to TS 38.101-1 on humidity condition for normal temperature**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Samsung*

**Decision: Withdrawn.**

**R4-2208491 Draft CR to TS 38.101-2 on humidity condition for normal temperature**

*Type: draftCR For: Endorsement  
 38.101-2 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Samsung*

**Decision: Not pursued.**

**R4-2208492 Draft CR to TS 38.101-2 on humidity condition for normal temperature**

*Type: draftCR For: Endorsement  
 38.101-2 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Samsung*

**Decision: Withdrawn.**

**R4-2208493 Draft CR to TS 38.101-2 on humidity condition for normal temperature**

*Type: draftCR For: Endorsement  
 38.101-2 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Samsung*

**Decision: Withdrawn.**

**R4-2208766 Draft reply LS on lower humidity limit in normal temperature test environment**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2209631 Draft Reply LS on lower humidity limit in normal temperature test environment**

*Type: LS out For: Approval  
 to RAN5  
 Source: ZTE Corporation*

**Decision: Revised to R4-2210810 (from R4-2209631).**

**R4-2210810 Draft Reply LS on lower humidity limit in normal temperature test environment**

*Type: LS out For: Approval  
 to RAN5  
 Source: ZTE Corporation*

**Decision: Noted.**

#### 13.2.6 Additional RF requirements for NS\_03U, NS\_05U and NS\_43U (R5-221613)

**R4-2209091 Discussion on the LS on Additional RF requirements for NS\_03U, NS\_05U and NS\_43U**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2209368 Reply LS on Additional RF requirements for NS\_03U, NS\_05U and NS\_43U**

*Type: LS out For: Approval  
 to RAN5  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2209369 CR for 38.101-1 to clarify ASE ASEM for NS\_03U, NS\_05U and NS\_43U (R15)**

*Type: CR For: Agreement  
 38.101-1 v15.17.0 CR-1095 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Not pursued.**

**R4-2209370 CR for 38.101-1 to clarify ASE ASEM for NS\_03U, NS\_05U and NS\_43U(R16)**

*Type: CR For: Agreement  
 38.101-1 v16.11.0 CR-1096 rev Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2209371 CR for 38.101-1 to clarify ASE ASEM for NS\_03U, NS\_05U and NS\_43U (R17)**

*Type: CR For: Agreement  
 38.101-1 v17.5.0 CR-1097 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2210208 Applicability of requirements for NS\_xxU**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2210811 (from R4-2210208).**

**R4-2210811 Applicability of requirements for NS\_xxU**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2210209 Applicability of requirements for NS\_xxU**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2210210 Applicability of requirements for NS\_xxU**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2210211 Reply LS on Additional RF requirements for NS\_03U, NS\_05U and NS\_43U**

*Type: LS out For: Approval  
 to RAN5  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2211129 (from R4-2210211).**

**R4-2211129 Reply LS on Additional RF requirements for NS\_03U, NS\_05U and NS\_43U**

*Type: LS out For: Approval  
 to RAN5  
 Source: Qualcomm Incorporated*

**Decision: Approved.**

#### 13.2.7 SCell dropping in FR2 RF UL-CA tests (R5-221617)

**R4-2207656 Relative power tolerance and RAN5 test solution**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2207681 Reply to RAN5 LS on SCell Dropping in FR2 RF UL-CA tests**

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

**Decision: Revised to R4-2210812 (from R4-2207681).**

**R4-2210812 Reply to RAN5 LS on SCell Dropping in FR2 RF UL-CA tests**

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

**Decision: Approved.**

**R4-2208603 Discussion on SCell dropping in FR2 RF UL-CA tests**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2208757 Draft Reply LS on SCell Dropping in FR2 RF UL-CA tests**

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

**Abstract:**

Draft Reply LS to RAN5 on the Scell dropping case and proposed changes to 38.101-2

**Decision: Noted.**

**R4-2208767 Draft reply LS on SCell Dropping in FR2 RF UL-CA tests**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2209419 R16 LS reply on SCC dropping**

*Type: discussion For: Approval  
 Source: OPPO*

**Decision: Noted.**

#### 13.2.8 Others

**R4-2210204 Configured maximum power in the absence of p-maxEUTRA and p-NR-FR1**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2211179 (from R4-2210204).**

**R4-2211179 Configured maximum power in the absence of p-maxEUTRA and p-NR-FR1**

*Type: draftCR For: Endorsement  
 38.101-1 v15.17.0 CR- rev Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2210205 Configured maximum power in the absence of p-maxEUTRA and p-NR-FR1**

*Type: draftCR For: Endorsement  
 38.101-1 v16.11.0 CR- rev Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2210206 Configured maximum power in the absence of p-maxEUTRA and p-NR-FR1**

*Type: draftCR For: Endorsement  
 38.101-1 v17.5.0 CR- rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2210207 Further Reply LS on configuration of p-MaxEUTRA and p-NR-FR1**

*Type: LS out For: Approval  
 to RAN5, cc RAN1, RAN2  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2210815 (from R4-2210207).**

**R4-2210815 Further Reply LS on configuration of p-MaxEUTRA and p-NR-FR1**

*Type: LS out For: Approval  
 to RAN5, cc RAN1, RAN2  
 Source: Qualcomm Incorporated*

**Decision: Approved.**

## 14 Revision of the Work Plan

**[103-e][137] R18\_basket\_WI, AI 14, 15 – RAN4 Chair**

**R4-2210272 Email discussion summary for [103-e][137] R18\_basket\_WI**

*Type: other For: Information  
 Source: Moderator (RAN4 Chair)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Revised to R4-2210469 (from R4-2210272).**

**R4-2210469 Email discussion summary for [103-e][137] R18\_basket\_WI**

*Type: other For: Information  
 Source: Moderator (RAN4 Chair)*

**Abstract:**

This contribution provides the summary of email discussion and recommended summary.

**Decision: Noted.**

**Conclusions after 2nd round**

1. **Agreements**: Based on the summary, I would like to propose that RAN4 endorses the following agreements:

|  |
| --- |
| * General:   + To merge 1BUL and 2BUL basket WI for NR CA, i.e. merged into xBUL (x=1,2).   + To establish one basket WI for SUL and one basket WI for V2X.     - NR\_SUL\_combos\_R18     - NR\_LTE\_V2X\_PC5\_combos\_R18   + 2UL CA in FR1 + 1UL in FR2 can be treated in 2UL since we don’t need to count the number of FR2 UL   + There is no need to set a dedicated WI for non-block approval combos * Consider the following NR CA/DC band combination basket WIDs in Rel-18   + NR CA/DC     - NR\_CA\_R18\_intra including TR and TP’s     - NR\_CADC\_R18\_2BDL\_xBUL (x=1,2) including TR and TP’s     - NR\_CADC\_R18\_3BDL\_xBUL (x=1,2) including TR and TP’s     - NR\_CADC\_R18\_yBDL\_xBUL (y=4,5,6, x=1,2) without TR and TP’s   + MRDC     - DC\_R18\_1BLTE\_1BNR\_2DL2UL     - DC\_R18\_2BLTE\_1BNR\_3DL2UL     - DC\_R18\_xBLTE\_1BNR\_yDL2UL (x= 3, 4, 5)     - DC\_R18\_xBLTE\_2BNR\_yDL2UL     - DC\_R18\_xBLTE\_yBNR\_zDL2UL (x=1, 2, 3, y>2 , z≤6)     - DC\_R18\_xBLTE\_yBNR\_zDL3UL (x=1, 2, 3, 4, y=1, 2; 3≤z≤6) |

For “non-block” approval, the common understanding is provided below but there are too many details to be further check. So the moderator propose to minute them for reference in this RAN4 meeting:

|  |
| --- |
| The important thing is to clarify which kind of band configurations should be treated as non-block approval and how to manage the non-block approval combos efficiently. Working group can further consider the following improvement:   * When requesting combos, the block approval or non-block approval combos should be distinguished. * Proponent companies are encouraged to follow the guidelines when submitting TPs so that the non-block approval combinations can be allocated to the correct agenda item at the first place. * RAN4 could consider enforcement of proper agenda item in the future in order for the Tdoc to be treated. * Even if the “not for block approval AI” is in each basket, it should still be treated in a specific thread where experts can solve the issue over the full length of the meeting. * 5) Requesting combos, implementing big CRs and organization can be handled together with both block approval and non-block approval combos. |

1. FFS: How to consolidate the LTE and HPUE, companies have different views and more discussions would be needed. There are following options for further consideration:

|  |
| --- |
| * How to consolidate LTE basket WIs:   + Option 1 (Alt.c):     - LTECA       * LTE\_CA\_R18\_xBDL\_1BUL       * LTE\_CA\_R18\_xBDL\_2BUL   + Option 2:     - One LTE CA basket WI * How to handle HPUE basket WIs:   + Option 1: Basket WIDs is power class inclusive (Nokia, T-Mobile USA, ZTE, Ericsson, Meta, Skyworks, Vodafone, LGE, Verizon, Qualcomm, AT&T, LGE)   + Option 2: Separate default PC and HPUE combos basket WIs, i.e. (China Telecom, China Unicom, Huawei, Apple, Qualcomm, CHTTL, LGE)     - High power basket WIDs       * NR\_PC2/1.5\_CA\_R18\_2BDL\_2BUL including TR and TP’s       * ENDC\_UE\_PC2/1.5\_R18\_NR\_TDD including TR and TP’s       * NR\_UE\_PC2/1.5\_R18\_CADC\_SUL\_xBDL\_yBUL including TR and TP’s       * ENDC\_PC2/1.5\_R18\_xLTE\_yNR including TR and TP’s       * NR\_intra\_HPUE\_R18 including TR and TP’s   + Option 3: Others to merge all the HPUE combos basket WIs into one HPUE basket WI. (China Telecom, CHTTL, ZTE) |

### 14.1 Discussions on R18 basket work items

**R4-2207904 New WID for Rel-18 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL)**

*Type: WID new For: (not specified)  
 Source: CHTTL*

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

**R4-2208337 New WID: High power UE for NR inter-band Carrier Aggregation with 2 bands downlink and x bands uplink (x=1,2)**

*Type: discussion For: Information  
 Source: China Telecom*

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

**R4-2208338 New WID: Downlink interruption for NR and EN-DC band combinations to conduct dynamic Tx Switching in Uplink**

*Type: discussion For: Information  
 Source: China Telecom*

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

**R4-2208562 Rel-18 WID: Dual Connectivity (DC) of 2 bands LTE inter-band CA (2DL/1UL) and 1 NR band (1DL/1UL)**

*Type: WID new For: Information  
 Source: Huawei, HiSilicon*

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

**R4-2208680 Handling of RAN4 band combination basket WIDs in Rel-18**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2208905 Draft Basket WID on adding channel bandwidth support to existing NR bands**

*Type: WID new For: Information  
 Source: Ericsson*

**Abstract:**

This contribution is new Rel-18 basket WI for adding new channel BW in existing NR bands

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

**R4-2209185 New WID on Rel-18 Power Class 2 UE for NR inter-band CA/DC with or without SUL configurations with x (6>=x>2) bands DL and y (y=1, 2) bands UL**

*Type: WID new For: Agreement  
 Source: Huawei, HiSilicon, China Unicom*

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

**R4-2209372 New 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 new For: Information  
 Source: Huawei, HiSilicon*

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

**R4-2209373 New WID on NR inter-band CA for 5 bands DL with x bands UL (x=1, 2)**

*Type: WID new For: Information  
 Source: Huawei, HiSilicon*

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

**R4-2209374 New WID on Rel-18 Dual Connectivity (DC) of x bands (x=1,2) LTE inter-band CA (xDL1UL) and 4 bands NR inter-band CA (4DL1UL)**

*Type: WID new For: Information  
 Source: Huawei, HiSilicon*

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

**R4-2209522 Release 18 baskets for two band and three band BC with UL configurations including intra-band ULCA**

*Type: discussion For: Approval  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution, we make a proposal to have dedicated baskets for two bands and three band DL BC with UL configurations including intra-band ULCA. Band combinations in these baskets would be treated in the "not for block approval" AI like in Release

**Decision: Noted.**

**R4-2209555 New Rel-18 WID: NR Intra-band**

*Type: WID new For: Information  
 Source: Ericsson*

**Abstract:**

New Rel-18 WID: NR Intra-band

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

**R4-2209556 New Rel-18 WID: LTE 3DL and one NR band**

*Type: WID new For: Information  
 Source: Ericsson*

**Abstract:**

New Rel-18 WID: LTE 3DL and one NR band

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

**R4-2209557 New Rel-18 WID: NR CA 4DL/xUL**

*Type: WID new For: Information  
 Source: Ericsson*

**Abstract:**

New Rel-18 WID: NR CA 4DL/xUL

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

**R4-2209558 New Rel-18 WID: PC2 for EN-DC with x LTE band + y NR TDD band (x= 2, 3, 4, y=1; x=1, 2, y=2)**

*Type: WID new For: Information  
 Source: Ericsson*

**Abstract:**

New Rel-18 WID: PC2 for EN-DC with x LTE band + y NR TDD band (x= 2, 3, 4, y=1; x=1, 2, y=2)

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

**R4-2209559 New Rel-18 WID: PC1.5 for NR CA with xDL and 2UL (1FDD+1TDD); (x= 2, 3, 4)**

*Type: WID new For: Information  
 Source: Ericsson*

**Abstract:**

New Rel-18 WID: PC1.5 for NR CA with xDL and 2UL (1FDD+1TDD); (x= 2, 3, 4)

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

**R4-2209739 New WID: LTE Advanced inter-band CA Rel-18 for x bands DL (x=4, 5, 6) with 1 band UL**

*Type: WID new For: Endorsement  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2209759 New WID: Additional NR bands for UL-MIMO in Rel-18**

*Type: WID new For: Information  
 Source: Huawei, HiSilicon*

**Abstract:**

Spectrum basket WID proposal for Rel-18.

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

**R4-2209760 New WID: Rel-18 LTE inter-band CA for 2 bands DL with 2 band UL**

*Type: WID new For: Information  
 Source: Huawei, HiSilicon*

**Abstract:**

Spectrum basket WID proposal for Rel-18.

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

**R4-2209761 New WID: Rel-18 simultaneous Rx/Tx band combinations for NR CA/DC, NR SUL and LTE/NR DC**

*Type: WID new For: Information  
 Source: Huawei, HiSilicon*

**Abstract:**

Spectrum basket WID proposal for Rel-18.

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

**R4-2210106 New Rel-18 WID on DC of 4 bands LTE inter-band CA (4DL1UL) and 1 NR band (1DL1UL)**

*Type: WID new For: Endorsement  
 Source: Nokia, Nokia Shanghai Bell*

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

### 14.2 Others

**R4-2209426 High new WID Power UE support for band n100 for Rail Mobile Radio (RMR) in Europe**

*Type: WID new For: Information  
 Source: Union Inter. Chemins de Fer*

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

**R4-2209428 New WID High Power UE support for band n101 for Rail Mobile Radio (RMR) in Europe**

*Type: WID new For: Information  
 Source: Union Inter. Chemins de Fer*

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

**R4-2209757 Revised WID: RF requirements enhancement for NR FR1 (R17)**

*Type: WID revised For: Endorsement  
 Source: Huawei, HiSilicon*

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

**R4-2209758 Revised WID: Further RF requirements enhancement for NR and EN-DC in FR1 (R18)**

*Type: WID revised For: Endorsement  
 Source: Huawei, HiSilicon*

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

## 15 Any other business

**R4-2207701 New WID on high power UE for NR inter-band CA with 2 bands UL and 2 bands DL with 26dBm on FDD band**

*Type: WID new For: Information  
 Source: China Unicom*

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

**R4-2207702 New WID on high power UE (power class 2) for NR FDD bands**

*Type: WID new For: Information  
 Source: China Unicom*

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

**R4-2208718 Motivation on basket WID on 4Rx and 8Rx bands**

*Type: other For: Information  
 Source: ZTE Corporation*

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

**R4-2208719 New WID on 4Rx\_8Rx support for NR bands**

*Type: other For: Information  
 Source: ZTE,China Telecom*

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

**R4-2209607 New WID for Power Class 1.5 for NR TDD-TDD intra-band combination**

*Type: WID new For: Information  
 Source: Verizon*

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

**R4-2209616 CR to TR 38.862 on cleanup clauses**

*Type: CR For: Approval  
 38.862 v17.0.0 CR-0001 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2210720 (from R4-2209616).**

**R4-2210720 CR to TR 38.862 on cleanup clauses**

*Type: CR For: Approval  
 38.862 v17.0.0 CR-0001 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

## 16 Close of the E-meeting

Report prepared by: MCC